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## PREFACE

If we look at general education in its broader aspects, we shall find that it exists everywhere. It may come from family associations, friends, churches, or schools. The problem considered in this study covers only a small part of the total range, namely, general education at the college level. It is further limited to an emphasis on science in general education at the six Oklahoma State Colleges as seen by those who are directly responsible for the program. Only by narrowing the scope of the problem can greater depth be attained.

Restriction to the college level brings further limitation because general education in the colleges of today differs in goals from other forms of education. One of the most distinctive aims is that it shall be concerned with the quality of experience developed within each student. This is an experience upon which he may base his life's activities and decisions. It is about this meaning that the major concern of the study revolves.

The problem under consideration is limited to the selected group of colleges mentioned, and looks to the addition of a scientific, critical analysis of the movement as it has developed and is functioning in these institutions.

In order to develop the study, the presidents, deans, departmental chairmen and teachers of science in general education were questioned at



length concerning their theories and practices in general education.

Views on general education as a movement were discussed to serve as an orientation and background to the more detailed study of the sciences in the program. It is in this last part that we can hope to find methods and materials, philosophies and aims, problems and successes that have proved themselves of value or have failed in the Oklahoma schools.

Only as a program is examined and evaluated can there be calculated, intelligent change. Only as general education meets the demands of democracy and society is it worthy of the faith which has been placed in it. This study can serve as one link in a chain leading to improvement. Answers to the questions used are presented in such a manner that they may prove of value in other studies of science in the general education program. As they relate to our peculiar problems in Oklahoma colleges, they may serve as reference material for committees and study groups wishing to review the general education program.

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# SCIENCE IN GENERAL EDUCATION AT THE OKLAHOMA STATE COLLEGES

## CHAPTER I

### INTRODUCTION TO THE STUDY

One of the most extensive changes to take place recently at the lower division level of undergraduate education is incorporated in "general education." The recent history of the progress of general education has been somewhat analogous to a prairie fire which, beginning as an unspectacular flame, is suddenly driven by the wind over the dry grasses in its path to flare out on a wide front; or, in smaller areas, it may come to a near standstill. Where there is fuel to feed upon, only a fresh breeze is needed to drive the blaze forward.

The influence of leaders in the general education movement is not unlike that of driving winds on a prairie fire pushing it forward. Our educational institutions in which programs are being developed provide materials to feed the fire. The movement has spread, drawing nationwide attention of educators to its activity.

Here the analogy breaks down, for the prairie fire is destructive, a destroyer of the products of growth. General education, limited only by the student's capacity, seeks to further individual growth and the development of knowledge and desirable attitudes for all citizens of a democracy.

It is a segment of this movement of general education as it has developed in the six Oklahoma State Colleges in the area of science that has been the major concern of this dissertation. The colleges selected for study are an administrative unit under the Board of Regents of Oklahoma Colleges. Included are Central at Edmond, East Central at Ada, Northeastern at Tahlequah, Northwestern at Alva, Southeastern at Durant, and Southwestern at Weatherford. Teachers of general education in science at these colleges, as well as administrators, provided the information used for analysis.

The following sections of this chapter will set forth briefly the need for a study such as this, the specific problem of the dissertation, the method by which the data were compiled, and the organization of the material.

### Need for the Study

#### Background of the Program

The official beginning of the general education program at the six Oklahoma State Colleges was the school year 1951-52. Much preliminary work was done by the Intercollege Curriculum Committee before this beginning. Harvey Faust, registrar at East Central, was chairman of this group. Though it was originally charged with a restudy of the total curriculum, the program of general education became its major project.

After extensive study by the group with the assistance of representatives from the different schools, recommendations were made to the Council of Presidents of the colleges. This Council approved the recommendations and submitted them to the State Board of Regents of Oklahoma

Colleges. Next, the findings went to the Oklahoma State Regents for Higher Education, who gave constructive criticism concerning the broad pattern of the final report. The last report, written in the form of a resolution, was passed by the Council of Presidents and the governing board of the colleges.<sup>1</sup> The State Regents for Higher Education approved the resolution only in its broad form, believing that approval of the detailed contents might at a later date be interpreted as restrictive.

Thus was born the program of general education in the six Oklahoma State Colleges.

#### Timeliness of the Study

As the program of general education in the six Oklahoma State Colleges neared its fifth year, it was deemed mature enough to justify investigation and evaluation. The official beginning of the program in 1951-52 followed over three years of planning and study. It is the period from 1951 through 1956 which is of chief concern here. The interviews for gathering the data were made in the spring of 1956. To check on any major changes which may have taken place during the writing, a follow-up questionnaire was sent to representative individuals selected from those interviewed at each institution. This was done in the fall of 1957.

This movement at the colleges included in the study had grown out of a need to prepare the increasing number of students at college level with a broader background against which they could stage their personal, political, economic, and social lives. The program to meet these needs

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<sup>1</sup>See Appendix III, Resolution Establishing the Program of General Education.

was established, but only as the educational efforts in this direction are studied and evaluated can there be any measure of success or failure or basis for suggested improvement.

#### Selection of an Area

It is obvious to anyone familiar with general education that the total program has tremendous breadth and depth, making it difficult if not impossible in a single study to probe deeply enough for concrete evidence on which to base an evaluation. On the other hand, if one major area were selected, some practical good might come of the effort.

There are several reasons why the program of science in general education was selected. First, the writer is presently engaged in teaching these general science courses. The question of whether or not the courses were accomplishing the purposes for which they were established was constantly presenting itself in personal experiences, conversations with contemporaries, findings of study groups, and reading from professional literature.

Further, science is and has been a topic of concern to laymen in recent years. Few decades, if any, have seen as many new developments as has that just past. The scientific and technological changes are so numerous and rapid that the average citizen can scarcely expect to keep informed. Yet never has there been a time when so many need to know the basic fundamentals of science. This is that they may participate as intelligent voters, consumers, military strategists, elected officials, or even as passive persons able to make a rational acceptance or rejection of propaganda associated with science.

Clearly, science in general education has become an area of great importance in the lives of many. This, coupled with the fact that many college students will acquire their total knowledge of science through the general courses, makes the area worthy of extensive study.

### The Problem

The problem of this dissertation is to make a survey of the general education program in science at the six Oklahoma State Colleges during the first five years of its existence. An analysis of the problem itself brought forth several questions: How has the program of science in general education developed at the six Oklahoma colleges? How well were its principles understood by those most directly concerned? What attitude was held toward the movement by those directing or teaching in the program? What status was held by general education? What were the practices relative to curriculum, instruction, and the student? What does the future hold in store for the program in these schools?

The problem becomes, then, one of finding answers to these questions through direct response from interviews with selected persons in these Oklahoma colleges and by comparison of these with what has been done or should be done, as set forth by professional writers in the field.

### Method Used for the Study

#### The Interview Guide

The pattern for the interview was developed from questions which have arisen concerning general education and the place of science in the programs. These questions and problems were selected from those appearing



in current literature, from personal knowledge of the problem, and from conversation with those who have participated in the movement at the six Oklahoma State Colleges. As background, the writer has the benefit of extensive reading from professional literature on general education, the chairmanship of the general education committee at the institution where he teaches, and teaching experience in both the general physical and biological sciences.

The tentative form of the guide proposed for the interview was too lengthy and perhaps awkward in sequence. The writer's graduate committee gave valuable assistance in refining this form. Colleagues also were generous in this respect, giving their time and advice and granting trial interviews. Better transitional organization was gained on the improved, final form. Many of the questions were anticipated by those interviewed and several commented favorably on the completeness of the coverage. A total of 141 questions appear on the interview guide, a copy of which may be found in Appendix I.

#### Persons Interviewed

Not all of the questions were asked of any one individual but they were divided according to the interviewee's responsibilities in the program. Of these 57 were directed to the presidents of the colleges, 89 to the deans, 107 to the teachers, and 50 to the departmental chairmen. If the chairman also taught in general education, 74 questions from those asked of the teachers were added to his list. Separate forms to each group interviewed would have required the writing and reproduction of 377 questions. By placing these in one unit and coding them with "P" for president, "D" for dean, "C" for chairman, and "T" for teacher, the length of

the interview guide was greatly shortened and duplication of questions on separate sheets eliminated.

#### Method of Collecting Data

The primary information for this study was obtained by direct interview with administrators and teachers connected with the program. This took place on the campuses of the schools included. A copy of the "Guide for Interview" was mailed to each of those to be questioned prior to the interview, giving an opportunity to become familiar with the questions to be asked of him and others. All institutions visited either arranged a tentative schedule of interviews through the administrative offices or designated someone to cooperate in doing this. In two instances departmental meetings had been called at which plans were made to facilitate the procedure. Because of this consideration it was possible to make as many as six interviews in one day. Two days was the most time required at any one institution. No one could have received greater cooperation and consideration than the writer did during these visits.

The questions asked and the answers of the interviewees were recorded with a magnetic tape recording machine. This is a method which facilitated the interview and extended the usefulness of the data gathered.

#### Advantages and Disadvantages of this Type of Research

Although the pattern was set by the guide, the oral responses permitted a flexibility not attainable with the standard write-in questionnaire. If the individual seemed at a loss in answering a question, a limited amount of explanation was possible during the interview. This might have had its dangers because of the ease with which the interviewer could

ask questions or make statements which would be leading. The writer was aware of this, however, and an effort was made not to influence the nature of the discussion. The respondent was at liberty to organize his own statements and extend them to include as many points as he saw fit.

Some problems were encountered in this method of obtaining data. The extemporaneous nature of the answers, if considered in one respect, was a disadvantage because the replies were not so well stated with respect to semantics as written answers would have been. There was also a chance for omission of points which the individual might otherwise have stated. Failure to include the basic concepts which are almost universally accepted was the most common, they being treated as though self-evident.

#### Treatment of Data

The information gathered on the tape recorder during the interviews was transcribed verbatim by a typist and grouped according to the position of the interviewee. This transcription was studied and important points and key ideas underlined. The second typing included only the marked phrases.

The responses were further classified by topic and those basically the same were retyped onto cards with the proper heading. The abbreviated cards, arranged according to major thought, proved useful in writing the report; however, they were repeatedly checked against the original sheets as a precaution against any deviation due to brevity and to refresh the memory relative to shades of meaning. In some cases the "taped" answers were replayed to re-establish some of the impressions which were gained

because of the manner in which the interviewee responded.

### Organization of the Report

With the exception of the first, second, and final chapters, the sections of the report will follow a regular pattern. Each begins with an introduction to the area with quotations from writers in the field. Against this background of information, the answers from the interviewees are presented for analysis and comparison. Chapter II gives basic information needed for understanding of the movement.

Though the interview guide followed a sequence that seemed natural for the interviews, the questions had to be regrouped to fit into the order of analysis indicated by the chapter titles. In each case, however, the number of the question is plainly set forth and can be found in original context and order in the "Guide for Interview" as it appears in Appendix I.

Chapters II through V are primarily concerned with the total program of general education in the six Oklahoma State Colleges. This proved necessary to provide enough background for the more specific study of the science area. The analysis of primary data begins with Chapter III. The interviewees were questioned as to their understanding of the program, the meaning and objectives of general education, and their philosophy regarding it.

After the interviewees were questioned concerning their attitudes and opinions of the total program, they were next questioned on their views of the role and objectives of science courses in general education. This is included in Chapter VI. Chapters VII through X carry the study

into the problems encountered in carrying on the program; an appraisal of the teachers; curriculum; methods of instruction; and evaluation. Student needs are the topic of Chapter XI. Chapter XII varies from the pattern and is reserved for a summary, evaluation, and proposals that grew out of the analysis.

## CHAPTER II

### BACKGROUND FOR THE STUDY

Chapter II has as its purpose the establishment of a generalized understanding of the terms which are needed for the explanation of general education, the background which brought about its development, and a survey of areas of learning usually included in general education programs. The discussion expands on these in this order.

#### The Goal and Definition of Education

A statement which is sometimes heard or read is that the aim of education is to develop the individual to the utmost of his capacity. Society is composed of individuals with widely varying abilities, but each has many potentials which may be developed.

These potentials may take any direction. Often these potentials are in diametrical opposition. Any release of human effort may be good or bad, constructive or destructive, intelligent or ignorant, stable or emotional. Educators are charged with directing the release of these in the proper direction.

This leads to the question of what is the right direction? Fortunately there are guideposts to which one may look as he observes the past and profits from experience. ~~It is possible to observe the trends~~

that reoccur through the history of mankind and from these to predict some of the probable future needs of man.

Both leadership and knowledge are needed to develop the potentials of a democratic society. The leadership should come from individuals having the breadth and depth of knowledge necessary to direct them unerringly to the goals which have value.

The purpose of education, then, is to direct the release of the individual's potentials in the direction that rational thinking, based upon knowledge and experience, has designated as the right direction.

#### Kinds of Education

The kinds of education take their name from the principal aims to be accomplished. Liberal education was in its earliest form an education for free man but has come to mean an education which is not directly concerned with acquiring knowledge and skills needed for earning an income. It is often called the education which every man should have.

For many specialized education means the kind of education which has as its ultimate goal the preparation of the individual for "earning a living." There are some, however, to whom specialization means the pursuit of intensive study in a limited area. This may be academic, professional, or vocational.

General education is that which is concerned with outcomes written in terms both of the student and of his place in society. A full descriptive definition of liberal education compared to general education will not reveal many great differences. Two things do appear to separate them,

however. General education requires a greater breadth of knowledge than could readily be obtained under the system of liberal education which had developed prior to the present movement, and general education looks more to changes of attitude and ways of thinking than to the knowledge of specific subject matter.

The definition of general education is discussed in detail in Chapter III. In the following section consideration is given to the reasons for the growth of the movement.

From a logical viewpoint it is possible to assume that the first learning was a form of general education which encompassed both liberal and general aspects. Primitive man, in all probability, not only taught his children the tricks of survival (vocational) but also those things that could make life more pleasurable and meaningful. Some time in the early history of man an awareness developed of the need for those things which lead to peaceful and compatible coexistence and the means leading toward this end became a part of the education of the individual. This was an acquisition of knowledge determined by the forces which influence and transform society itself. Occasionally, especially in recent times, there appear some indications that this pattern may be reversed and that the kind of schooling may determine the form of society which we have; but war, crime, and intolerance continue to persist in spite of present efforts in education.

The situation which demands an education and dictates the kind of learning has not, in terms of basic needs, changed too greatly. One may still find, for example, those things which, under one circumstance, might be a part of general knowledge becoming useful for making a living



or merely contributing to a more satisfying life. General education has existed in all learning and exists in life itself. Every experience, every observation, becomes a part of the individual. It is said that "general education occurs at any point in the student's experience as a result of which he progresses toward the achievement of one or more goals of general education."<sup>1</sup>

#### The Beginning of the Present Movement

The development of a program of instruction, and consequently of general education, has been influenced by factors which are relatively easy to identify. They are the change in the number of those who attend college, the change in emphasis on the purpose of learning, the development of a culture heavily influenced by science and technology, the demanding need for specific skills, a rapid increase in the extent of knowledge, and a withdrawal from the influence of the educational patterns or cultures of other countries to one which is more appropriate to our American democracy. Each of these carries with it related problems.

Though general education is not new in itself, the beginning of the present movement is recent. The recognition that a change was needed and the attempts to arrive at a solution go back a little farther. The first of these was the establishment of the free elective system for which Harvard, under the leadership of Eliot, provided the best known and most influential program. This might have been a satisfactory solution had the extent of knowledge and subject matter offerings not expanded so rapidly concurrent with the inauguration and growth of this system.

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<sup>1</sup>B. Lamar Johnson, General Education in Action (Washington, D.C.: American Council on Education, 1952), p. 40.

The second major reorganization of the educational system aimed at alleviation of the increasing problems was the organization of the school into divisions or departments and the major-minor system. Both of these were aimed at the elimination of a hodgepodge of freely elected subjects which, for many, resulted in a college degree with no depth of knowledge in any area.

There was still a lack of integration of subject matter, a condition which was aggravated by an increasing tendency within departments to teach as though the only purpose of undergraduate education was to prepare the student for graduate study. The next major transition to be found was aimed primarily at this condition.

Educators reasoned that courses which sampled the different branches of science would be the solution. In the early 1920's "survey courses" were tried, but it soon became apparent that they were psychologically and educationally impractical. So many topics were covered so rapidly that no depth of knowledge could be attained, and students were discouraged by having to leave a given area just as they began to gain enough familiarity with its concepts to enjoy their study and profit from it. There was also a tendency to teach these courses as isolated cells of knowledge rather than as integrated parts of a whole.

Simultaneously with the development of the survey courses came the work of some farsighted educators who were seeking means of giving all students a general and integrated core of knowledge. Columbia University is quite generally given credit for the first successful attempt in this direction with their course or program called "Contemporary Civilization." This was first taught in 1919. Other colleges followed with

programs which, although they differed in organization and sometimes in basic philosophy of education, were aimed at giving all students a well rounded, integrated form of schooling.

Criticisms of Education which Have Led  
toward General Education

Our schools are the cynosure of the public eye! The moment things begin to function at less than perfection in our society, the schools are certain to be called on for assistance. Or, conversely, there may arise a rabble of castigation of the entire educational system. Education, existing under this barrage of complimentary and adverse criticism, brings those who are concerned with the program to an acute awareness of its problems. Probably no other institution is so quick to study its own conduct and so diligent in policing the methods of its system. It is by and from this self-study, self-analysis, and experience in improvement that the movement of general education has risen.

One needs but to read the newspapers and magazines or attend a professional meeting of teachers to hear of the dissatisfaction with our present educational system. This is in spite of widespread support of and faith in education as the foundation of our society. This criticism could be roughly classified according to the interest and background of the critic. Lippmann makes a charge which is representative. He says:

During the past forty or fifty years those who are responsible for education have progressively removed from the curriculum of studies the western culture which produced the modern democratic state; . . . the schools and colleges have, therefore, been sending out into the world men who no longer understand the creative principle of society in which they must live. . . .<sup>2</sup>

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<sup>2</sup>Walter Lippmann, "The State of Education in This Troubled World," *Vital Speeches of the Day*, VII (January, 1941), 200-201.

More and more one hears the criticism springing from foreign propaganda which says, in effect, that the American system is not educating its students because it produces no depth of knowledge. A statement typical of this is "I have been increasingly sure how alarming is that which passes for education in twentieth-century America."<sup>3</sup>

Other criticisms, especially of liberal education, are found in such descriptive phrases as "compartmentalism" or "separate packages," "disorganized" or "not integrated into a consistent whole," or "unrelated fragments" and "lack of a sense of unity and meaning." All are in protest against the free elective system that fails to provide a hard core of common knowledge and which lacks the intellectual unity to form a basis of understanding among educated men the world over.

From this point of view one may make the full swing to those who say that in a modern, complex, technological society only specialization can provide the answer. It is true that because of the functions of business and industry today an immediate monetary premium is often given the services of the specialist. He can step directly into a highly paid position in most areas of specialization, but because his scope of usefulness is limited by his narrow training to this position, advancements are not likely. It is the person who knows something of many areas who collects the rewards of leadership promotions. The specialists who fail to broaden their knowledge are not always leaders of people.

Another type of criticism relates to values. It is frequently charged that too much stress is placed on hours, grade points, and passing

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<sup>3</sup> Bernard Iddings Bell, Crisis in Education (New York: McGraw-Hill Book Company, Inc., 1949), p. vii.

examinations. Whether the struggle for grades is self-imposed or institutionally encouraged, it tends to distract from the true goals of education which are concerned with attitudes and the way of thinking as well as with factual knowledge.

Scientists have developed great machines, nuclear energy, and synthetic fibers, yet the knowledge of how to control the economic and social problems inherent in these discoveries is not forthcoming from these specialists. Nor have sociologists and economists advanced rapidly enough to be able to seize the reins and bring the situation under control.

No one would advise that complete uniformity of ideas be demanded, whether they be political, religious, or other; yet, when the teaching profession leans too far from a firm expression of opinion, the student is left without proper guides and must look to some other source than this schooling for direction. The whole problem reverts to the question of whether we shall educate for living a well-rounded life, or we shall educate the student in specific ideas and areas and those alone.

#### General Education: An Answer to Criticism

General education is an offensive. It is an offensive mounted by the liberal arts schools to combat criticism directed against the abused free elective system, the limiting specialization program, and the lack of aims or directions given graduates of these schools. But more than just an offensive, the change in the educational pattern is an indication of transition to cover the needs of a dynamic society.

Our whole way of life has changed. Before the turn of the century most people lived simply and austere, according to our standards.

Society was not so complex nor were the demands on the individual so great. A college education was not necessary; it was a luxury for the privileged few. A farmer with a few simple tools and a strong back could, with a little knowledge and long hours, support his family. In many cases the job of making a living required the work of whole families and more than double the time now necessary. There was no time to "waste" on a college education.

But things have changed. Population has increased, industrialization has expanded, and the hours of work required to earn a living have been reduced. These changes and others have released children from long hours on the farm. Labor laws have changed, and more children remain in school for a longer period, creating in many cases a desire for more knowledge. During the depression years of the 1930's the college became an effective means to keep the young people out of a crowded labor market. And, more recently, the stepped-up technological advances of World War II and the following years have brought tremendous demands for trained people. The social and political problems growing out of this have focused attention on the need for a deeper understanding of international affairs by the American people, whose nation has been thrust into a position of world leadership. Add to this the flood of veterans crowding the institutions by taking advantage of the G. I. Bill, and the resulting picture is a spiraling demand for higher education all across the nation.

Education today has become education for the masses, a preparation for life in a democracy which must provide much of the leadership in a world conflict of ideologies. This brings us again face to face with the question of the aims and purposes of a college education. What will

be the answer to the growing army of students with hungry minds who come seeking knowledge? Will they be invited in to help themselves to whatever subjects suit their tastes with no preparation or guidance to aid them in choosing a balanced diet? Will they be fed on one thing alone, not being shown the other things available nor having an explanation of the values of extensive knowledge for living a full and contented life?

For the answer one must look to the general education program and its aims. To do this a brief summary of the areas most commonly included in the general education program will be surveyed.

### Areas of Learning Included in General Education

#### Communications

The area of communications is comparatively new in its modern concept. As usually taught today it attempts to integrate the four linguistic aspects: reading, writing, speaking and listening. Communication is necessary for transmission of knowledge and for thinking. Without this there could be no education. As such it represents a tool of learning; therefore, it is common to all disciplines. Leyden defines communications as "the study of the ways in which people try, primarily through language, to get their ideas across to others, and, in turn, try to understand the meaning and significance of what others are trying to say to them, whether the avenues used are reading, writing, speaking or listening."<sup>4</sup>

Communications in general education has developed as a synthesis

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<sup>4</sup>Ralph C. Leyden, "General Education Communication," Current Issues in Higher Education, 1956: Resources for Higher Education, ed. G. Kerry Smith (Washington, D.C.: Association for Higher Education, 1956), p. 235.

of the previous separate courses in speech and composition. It included the newly recognized receiving aspects, listening and reading, as well as mass communications. A fifth aspect, that of viewing, is added by some. This includes such varied media as television, movies, film recordings, and the illustrated newspapers and magazines.

Still suffering from rapid growth and immaturity, the attempted programs in this field are troubled by lack of trained teachers and by confusion as to objectives, the need for a better testing system, and absence of enough research to provide answers. A question has been raised as to "whether any communication program today can justify itself unless it recognizes . . . student needs . . . and hence includes stress upon critical evaluation of the mass mediums of communications."<sup>5</sup>

This area has many problems and more critics, but it is moving steadily forward to solutions and answers. The program of communications in general education at the Oklahoma State Colleges is organized on an adaptation of courses which were beginning liberal arts courses. Each student is required to take two grammar and composition courses for a total of six hours. They complete an eight-college-hour requirement with a course of the student's selection. Advisors often urge them to take these additional hours in speech.

#### Humanities

One of the most difficult fields in which to identify specific objectives and course content is that of the humanities. However, study

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<sup>5</sup>Harold B. Allen, "Communications," General Education in Transition—A Look Ahead, ed. H. T. Morse (Minneapolis: The University of Minnesota Press, 1951), p. 160.



in this area probably comes nearer bringing together all facets of knowledge needed by the individual than does any other. The humanities acquaint the student with the values and great writings found in our democratic tradition, and may develop an appreciation and understanding of the arts. In this respect they negate some of the criticism of our twentieth-century education.

As our modern technological society advances and fewer work hours are required to make a living, we find a growing need for education beneficial to leisure-time activities. The humanities fill that need by developing an aesthetic appreciation of that which is beautiful and harmonious in the arts, and a rejection of the poor and shoddy.

A practical extension of the aesthetic quality is the development of a critical awareness that will lead to enlightened judgment and evaluation. This can be accomplished by studying what great men of the past have thought good, wise, or beautiful and applying this to the basic issues of the present. In this age of rapid communications, this critical awareness should encourage attempts on the part of individuals to get beneath mere propaganda through analysis of statements, rather than to assume a hypnotic state of mind brought about by the form of jargon often substituted for thought.

In order to lead the student toward these goals, the Oklahoma State Colleges have, as a part of the pattern of general education, agreed upon the program in which the students are required to complete five to six hours in the humanities. These may be chosen from the two survey courses in general humanities, or from the other humanities courses which cover literature, art, music, psychology, or philosophy.

### Fine Arts

The field of fine arts in the general education curriculum normally includes visual arts, music, and sometimes literature. Although often included within the broad scope of the humanities, these aspects are occasionally separated into a branch of their own to promote greater aesthetic appreciation.

Inherent in the program of fine arts are questions concerning the relationships of theory to practice, the advisability of general subject matter rather than separate specialized courses in the various arts, and the problem of whether to emphasize great art of all ages or to begin with appreciation of contemporary art. Any attempt to include the fine arts in the general education program by survey courses comprising all the arts will have the additional problem of the separate technical vocabularies that must be presented.

Stephens College centers its objectives in fine arts around "appreciation of the beautiful." After a student has been exposed to a particular work of art long enough, she is supposed to form her own opinion of what is good and to be able to answer such questions as: "(1) What is it about? (2) What is it for? (3) What is it made of? (4) How is it put together? (5) What is the style? (6) How good is it? (7) What has my exposure to it done to me?"<sup>6</sup>

The study of fine arts is included in the required five to six hours of humanities in the general education program of the Oklahoma State

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<sup>6</sup>B. Lamar Johnson and W. S. Litterick, "Stephens College: Functional General Education for Women," Organization and Administration of General Education, ed. W. Hugh Stickler (Dubuque: Wm. C. Brown Co., 1951), p. 257.

## Colleges.

## Languages

Ironical as it may seem in a world that grows smaller every year "it is still unusual to find a general course in language of any sort included as a required part of a program of higher liberal education."<sup>7</sup> Most colleges, however, offer foreign languages that may be elected as a part of the general education requirements or studied as a major.

Two notable exceptions to this trend might be cited. Basing his statement on the opinion that "no one is fully educated who knows only his mother tongue,"<sup>8</sup> Cunningham suggests that at least a reading ability in one foreign language should be acquired before a student enters the upper two years of college. St. John's College includes as a part of its required effort toward a rigid intellectual program, studies of Greek, Latin, French, and German.

Foreign language in the Oklahoma State Colleges is purely elective, but it may be counted as general education hours. Each institution is allowed to set up its own program in this field, counting five credit hours toward the general education total.

## Social Studies

The place of the social studies in general education can best be expressed by citing the goals of the program. One of the most widely

<sup>7</sup>James A. Babcock, "A General Course in Language," The Idea and Practice of General Education, ed. F. Champion Ward (Chicago: The University of Chicago Press, 1950), p. 214.

<sup>8</sup>William F. Cunningham, General Education and the Liberal College (St. Louis: B. Herder Book Co., 1953), p. 75.

quoted and accepted sets of goals for this area is that by Levi. He lists five aims as follows:

1. To provide a genuine understanding of the society within whose frame we live.
2. To exhibit those conflicts of value which underlie all political and economic decisions.
3. To provide the social knowledge which is a prerequisite to wise decisions of social policy.
4. To enlarge social sensitivity in those areas in which institutional change is desirable.
5. To prepare and encourage the individual toward intelligent social action.<sup>9</sup>

Since the social studies involve the whole social universe of the student, the more recent efforts are toward courses which use material from all branches of the field. Levi points out that the objective is to give "an integrated and comprehensive picture of the nature of modern society," and the task for instructors of social studies is "not merely the inculcation of new ideas; it is equally the eradication of bad previous education."<sup>10</sup>

The plan for studying the social sciences in general education at The University of Chicago is divided into three parts. In essence, the first of these acquaints the student with the history of the country; and, in the words of Singer, the second points to "what social science can contribute to an understanding of man and society." He adds that the third course introduces him "to the habit of deliberating rationally on problems

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<sup>9</sup>Albert William Levi, General Education in the Social Studies (Washington, D.C.: American Council on Education, 1948), p. 3.

<sup>10</sup>Ibid., p. 21.

of public policy."<sup>11</sup> Other colleges use a plan for integrated study that includes history, contemporary problems, and areas of sociology.

The required courses for the general education program in the selected Oklahoma colleges are government, three hours; American history, three hours; and electives to complete a total of nine hours. The elective courses may be selected from the areas of economics, history, geography, government, or sociology.

### Morals and Ethics

Because most colleges take for their major goal the development of intellectual disciplines rather than ethical and moral virtues, one seldom finds courses in which a student can enroll, saying, "Here is where I can learn morals and ethics." It is improbable that a student could be taught moral virtues in the same manner he is taught history or grammar. Then, just where is he to learn these qualities that are so important to the development of the "good" life for the "whole" man? They cannot be completely ignored in a program of general education.

Although the teaching of moral and ethical virtues is not to be found in direct classroom instruction, these are secondary values in many courses or activities on the campus. Their nature is such that only by understanding, followed by habitual practice, can they be deeply instilled in an individual. Basic beliefs of the entire college personnel will reflect in students' attitudes toward such things as cheating on examinations, fair play in sports, overcoming fear, and the values of prudence

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<sup>11</sup>Milton B. Singer, "The Social Sciences," The Idea and Practice of General Education, ed. F. Champion Ward (Chicago: The University of Chicago Press, 1950), p. 131.

and fortitude. So we need not feel that the students in our state colleges have no opportunity to develop this phase of their personalities even though no course makes a direct approach to this end.

### Health and Physical Education

Health and physical education requirements for general education are probably more nearly universal than those in any other areas. Some schools place instruction in health under the physical education department's jurisdiction while others include it as a part of personal adjustment, biology, or home economics courses. But, wherever it may be taught, some form of health education along with physical education training is considered desirable in any program of general education.

So much importance is attached to the matter of health education in California that it is required by state law for junior college graduation. This is prompted by the basic belief that a student would be unable to reach the other goals without good health habits to sustain him.

The objectives for health and physical education as set up by the State University of Iowa are a typical example of the aims. They are:

(1) To develop an adequate level of endurance, agility, and skill in body mechanics; (2) to develop sufficient skill in at least one individual sport or activity to use it for recreational purposes and for maintenance of good physical condition; (3) to provide experience in participation in at least one team sport or group activity in order to use it for recreational purposes and as an aid to social adjustment; (4) to develop some knowledge of sports and recreational activities for enjoyment as spectator or participant.<sup>12</sup>

Other sets of objectives may lean toward physical education as a

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<sup>12</sup>Dewey B. Stuit, "General Education at the State University of Iowa," Organization and Administration of General Education, ed. W. Hugh Stickler (Dubuque: Wm. C. Brown Co., 1951), p. 129.

part of the social development, toward building poise, establishing self-confidence, developing habits of fair play, and the will to win.

Two hours of health education and four hours of physical education as an activity are required in the selected Oklahoma colleges. There is within this program a broad choice in the type of activity the student may select for his participation.

### Practical Arts

The field of the practical arts may be broken down into the broad areas of industrial arts, home economics, business, and agricultural education. The distinguishing quality of such courses is that they are designed specifically to aid the student in doing some of those things which require some manual skill and are related to the work by which men make their living. This does not, however, mean that the extent of their benefit stops here. Each course has within its grasp the means to contribute toward the goals of the entire general education program. Each of these areas also sets up generalized criteria which look to the integration of knowledge and the development of the total personality.

As Wynne has said, "The subject matter of the practical arts is as indispensable in the total program of general education as are the subject matter of science and the subject matter of the fine arts."<sup>13</sup>

In the general education programs of the Oklahoma State Colleges, the practical arts are entirely elective, but may be applied as a part of the total required hours.

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<sup>13</sup>John P. Wynne, General Education in Theory and Practice (New York: Bookman Associates, 1952), p. 61.

### The Sciences

Because the emphasis of this dissertation is on sciences in general education, the discussion of these extends to later chapters and will be developed here only to the extent needed to complete the picture of the fields included in the movement.

It is not the purpose of general education to start the training of professional scientists. Conversely, experience and studies have indicated that traditional courses do not meet the needs of those who are not to be specialists in the field. General courses in both the physical and biological sciences have been organized and represent the most common approach to teaching the sciences in general education. The colleges represented in this study require four college hours of general biology and four hours of general physical science or approved alternatives to satisfy requirements of the program.

### Conclusion

Though the patterns for general education vary from the entirely prescribed curriculum at St. John's College to the almost free elective system at Bennington and Sarah Lawrence, the end to which all colleges look is the preparation of American youth for dealing with personal, social, and political problems which confront all men in a democratic society. General education is a continuation of the training received before the student arrives at college and the tie which increases the knowledge basic to the needs of citizenship in a democracy.

If the goals of general education are reached, the student will go forth with a better understanding of social and political matters, a



capacity to enjoy and appreciate the aesthetic qualities in his world, and the ability to ponder intelligently the nature of the universe and his role in it.

## CHAPTER III

### THE MEANING OF GENERAL EDUCATION

#### Definitions and Their Analyses

A study of general education in the science areas appears to be a clear-cut and relatively simple problem, yet as the investigation progresses, complexities develop. It seemed in the beginning that the meaning of the term general education would be concise and well established, and that the responses of those interviewed for the study would yield a near consensus which would be serviceable as a common guide in our study and analysis. Such simplicity did not develop; even the definition of the term was involved because of divergent opinions. An interviewee states that the greatest problem of general education is that no common assent exists on the definition.

#### The Source of Information

The first question asked of the respondents was, "In your own words, how do you define general education?" These responses and the definitions of authors writing in the field of general education constitute the basic material for Chapter III. The answers of the interviewees are analytically compared to those of the writers in the field. No two of the respondents' answers were completely the same except in the case

of those who referred to published or locally duplicated definitions.

After classifying the responses under separate points of emphasis, it was found that among science teachers and administrators in the Oklahoma State Colleges there were over two dozen different definitions of general education. This is not to say that there were that many different concepts, but there were distinct variations in points of emphasis. A similar breakdown of definitions given by professional writers was made with the same results. Again, over two dozen different points of distinction were made.

#### Why Define?

The above statements relative to differences in ways of defining general education indicate one of the needs for clarification of meaning. In most major studies used, definition receives great emphasis. The opposite point of view, however, is expressed by one respondent who feels that too much time is spent in trying to arrive at definitions and too little is given to carrying on the program.

#### Concerning the Pattern of Discussion

An attempt has been made to arrange the definitions given by authors writing on the subject of education according to thought and frequency of response followed by the persons interviewed. Some success has been attained in this respect, indicating a relationship between the definitions of respondents from the Oklahoma State Colleges and the definitions of professional writers. This will become more apparent and significant as the discussion develops.

### Some Characteristics of the Interviewees which Affect Responses

The group surveyed, with few exceptions, had not studied the principles and concepts of the general education movement. They were science teachers assigned to do a job of instruction in this area. This assignment has been received with all gradations of cooperation from expressed antagonism to enthusiasm. In the institutions studied there have been extensive individual and group studies made in attempts to further understanding and appreciation of the philosophy of general education as well as efforts aimed at a better understanding of the methods of teaching the classes in the manner suggested by the proponents of general education. The administrators generally displayed a high level of knowledge of the program, its needs and problems. Does this broad over-all view of general education held by the administrators, compared with the view embracing only one area as held by general science teachers, account for the differences in their answers? It seems that it might, yet the previously mentioned breakdown of professional writing in the field shows about the same amount and kind of disagreement among these writers as we find between Oklahoma teachers of science and the administrative personnel.

### The Definitions Obtained during the Interviews

It is completely impossible to characterize all the definitions. The extemporaneous answers resulted in some vagueness, an occasional conflict in the statements of a given individual, and some rambling such as results when one thinks aloud. To offset this, each gave a sincere statement on his concept of the meaning of general education. There did develop from these a significant pattern of agreement. Any definition will

be influenced by the interest and concern of the person giving it. In general, those familiar with the program will be approaching the definition from one or more viewpoints. They may think in terms of liberal arts or kinds of knowledge. The teacher may define in terms of materials and instruction. A few people will define general education as a system for passing on our cultural heritage. However, all will be concerned with outcomes in terms of the student and the needs of society. These factors will be observed in the following sections of this discussion.

#### General Education as Knowledge

Both the respondents and authors of references cited were in agreement relative to the attainment of knowledge as a primary condition of general education. As these definitions were analyzed, the similarity as well as the divergence in thought due to language usage will become apparent. A few excerpts from definitions in current writings containing references to knowledge have been collected. "General Education is that part of education which is concerned with the common knowledge, skills and attitudes needed by each individual. . . ."<sup>1</sup> Since common knowledge, by the very nature of man's learning, is without definable limits, the idea of "encompassing the common knowledge" provides a flexible term for describing the breadth of information to be disseminated as general education.

Another writer recognizes that it is beyond the ability of any one person to keep pace with modern knowledge. He says, "The courses must be selected because knowledge has become so extensive that it is literally

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<sup>1</sup>B. Lamar Johnson, General Education in Action (Washington, D.C.: American Council on Education, 1952), p. 20.

impossible to present all of it."<sup>2</sup> He further points out that this is not necessary because much of cultural heritage is conveyed to society by social transmission. There will also be much knowledge passed on through society, the home, friends, the community, the church, and other efforts toward personal development. We cannot overemphasize in speaking of the breadth of knowledge that life itself is a part of general education and that the schools are but agents in the transmission of things known.

Knowledge is either good or bad, valuable or worthless. The criteria of values established by adult society dictate that instruction must be given in areas of learning which are traditionally recognized to be valuable or which currently are important to our society and culture.

All of this consideration of the kind of knowledge is brought into focus by Meyer with the statement, "General education is intended to provide a rich academic background in organized knowledge and human activities."<sup>3</sup> Careful consideration of the full meaning of this statement will show that breadth, kind, selection, and quality of knowledge have been considered. As has been seen, then, general education consists of broad common knowledge which deals with matters which are of general concern to the community and important to the development of the individual in his preparation for citizenship.

"Knowledge" was also by far the most frequently used expression found in the definitions given by respondents. Knowledge is fundamental

<sup>2</sup>William F. Cunningham, General Education and the Liberal College (St. Louis: B. Herder Book Co., 1953), p. 6.

<sup>3</sup>Adolph E. Meyer, The Development of Education in the Twentieth Century (New York: Prentice-Hall Inc., 1949), p. 407.

as an outcome of education. Under consideration here was an area of education; therefore, it is to be expected that a definition of general education may be built upon the definition of education itself.

There were sixteen separate uses of the idea of knowledge in the definitions given by the interviewees, some of which follow in abbreviated and paraphrased form with comments on significant parts of them. One administrator states that a wide knowledge of facts is an essential part of general education. Knowledge in terms of facts is the kind of expression we would expect from a classroom teacher of science, yet the term "facts" is not met with again in definitions given by the teachers as often as would be anticipated in view of their background of scientific training. Except as it appears as a criterion of learning, the word in most cases is implied.

Illustrative of the manner in which knowledge and its extent is brought into the definition are such statements and phrases as, "to gain a wide knowledge of facts," "to introduce students to a broad field of knowledge," "to develop storehouses of information needed through life," "to provide a greater range of knowledge," "to build basic concepts of all fields of knowledge," "to broaden the scope of knowledge," and "to transmit a body of knowledge every educated person should have."

The kind of knowledge is indicated by those who see general education as "knowledge needed by all regardless of vocation, profession, or interest," "knowledge of things essential to leading a successful life," "that which encompasses knowledge, skills, and attitudes needed by each individual to be an effective person," "knowledge you would expect an educated person to have," "things (knowledge) a person would need in general

everyday life," and "knowledge which is the right and obligation for every student to acquire." Besides the discussion of knowledge in terms of its breadth and kind, there are some who think of knowledge in terms of its source. Such a definition would include "knowledge from previous experience." Others think of knowledge in terms of the aims or goals of general education, asserting that general education is that which seeks "common goals of knowledge."

One may note with satisfaction the reference to the breadth of knowledge as a conditioning factor in so many of the statements. This takes the form of such modifiers as "wide," "essential," "greater range," "experiences of the past," "well-rounded," "common goals," "concepts of all fields," "broadening of scope," "body of knowledge," and other expressions. Only one individual limited the breadth of knowledge to an appreciable degree, restricting it to the sciences and closely related areas. There is, in this case, the chance that the question was misunderstood.

#### General Education as Areas of Learning or Common Experiences

There was less tendency of the writers surveyed to define general education in terms of subject matter than there was among Oklahoma teachers. Although not indicated in the quotations which follow, those writers who did define general education in terms of subjects exhibited a tendency to stress some given area. This is a reflection of individual interest. The representatives of most church schools, for example, would not consider a program of general education complete which excluded religion and ethics as an area of study.

An occasional writer will include in his definitions the stipulation that general education is "a basic understanding of sciences, social



science and humanities. . . ."<sup>4</sup> It is probable that many writers feel a detailed listing of subjects clutters their definitions, whereas, in the oral responses this statement of subject areas was used to assure clarity and emphasis. There were also generalized statements relative to areas of learning which by traditional standards are held to be valuable and statements in terms of the student and his ability to recognize the principal areas of knowledge.

Common areas of learning lead to a common experience. It includes ". . . learning which should be the common experience of all educated men and women"<sup>5</sup> or, as Levi states it, "It is the education that all persons ought to have within the limits of their capacity to receive it."<sup>6</sup> Few will question the place of general education as a common experience for all citizens or that it should occur simultaneously with all learning, contributing to individual development.

The general education which is obtained in the schools is but one facet which can be controlled to the end that ideals and living standards may be upheld and in the end elevated. Schools are the agents by which the efficiency and universality of our education may be increased and perpetuated.

In frequency, the answers of interviewees giving their definitions in terms of subject areas were second only to those who built a part, or

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<sup>4</sup>Cunningham, op. cit., p. 10.

<sup>5</sup>President's Commission on Higher Education, Higher Education for American Democracy, Vol. I: Establishing the Goals (New York: Harper and Brothers, 1948), p. 49.

<sup>6</sup>Albert William Levi, General Education in the Social Studies (Washington, D.C.: American Council on Education, 1948), p. 6.

all, of their definition around knowledge to be gained. This is understandable since we find so many references to science, social studies, and humanities as the big triumvirate of general education and since the subject areas themselves do point to the knowledge desired. Encouragingly enough, as seen in the following selections from definitions, many regard general education as much broader than the three major areas. The most limited of the specific listings called for communications, natural science, humanities, and social studies as the basic areas. One starts to list English, history, and science, then, departing from the list, concludes with the generalization — "a broad thing." Another reverses the approach and says that "general education is acquiring knowledge from broad areas of human experience such as science, social studies, humanities, and language arts." Still others are even less specific than the first of these just cited, stating such conditions as "an attempt to educate in several areas of knowledge," "wide varied fields," "an introduction to various major fields of learning," and "draws from as many divisions of the college as possible."

In one instance the person interviewed gave a very restricted view of the scope of general education, limiting it to "a body of information . . . of a scientific nature . . . most likely to be used by non-technical students." This statement comes from one who expressed far greater than average enthusiasm for the general education program, yet examination of this and other of his responses indicates a strong bias to the sciences. There is some chance that interest in an area of endeavor has produced a tendency on the part of this respondent to interpret all questions, although they may refer to the movement as a whole, in terms of science.

Another expression which occurred frequently in the respondents' definitions was that of a "common experience." This is closely related to, and to a certain extent covers, both general education as knowledge and general education as study in selected areas. The reader will notice that the ideas listed under the several headings cannot in all cases be clearly classified under that division and in some instances will fall in to more than one of the suggested headings. There were found expressions on general education as a common experience such as: "knowledge," "subject areas," and other closely related words or phrases. This should not distract from the analysis but rather point to the unity of thought prevailing although expressed in diverse ways. As the study continues, there is gained from this variance a body of words and phrases which will be incorporated into a composite definition.

In a program, which looks to the accomplishment of as many goals as does education, no one aim can be established as holding first place in the definition; yet, the idea of a common experience seems to be stated or implied in each of the answers to the question. The synthesis of the definitions which follow will illustrate this point as well as the manner in which different respondents use the condition of a common experience in the definitions. Implying this commonalty of general education, teachers give such answers as, "It is general background information which is valuable in any field, in fact fundamental in all fields," or "General education is that which becomes a part of a person's background that he can use in all professions." Further variation of language develops as some of the respondents attempt to clarify the idea of common experience. Typical of these are, "General education is non-specialized, non-vocational

learning which leads to a common experience," or "It is that type of education which covers the fields which should be of interest to everyone."

In addition to these are found the more common and, in general, more brief statements such as, "General education is that which will give the student a grasp of fundamentals," and "General education is knowing a little about a great number of subjects."

#### General Education as a Means of Developing a Way of Thinking

Included in numerous definitions is the idea that general education provides for the development of ability to think critically, analytically or rationally. In terms of the developmental qualities, one finds it helps develop "thoughtful citizens acquainted with the great questions which confront thinking men."<sup>7</sup> Wynne notes that "a careful analysis of current literature in the field of general education reveals considerable unanimity as to the importance of responsible reflective thinking."<sup>8</sup> Eckert says general education is that which aids the student "to think in terms of living in a democracy."<sup>9</sup>

The idea of developing a background of knowledge for analytical reasoning and intelligent critical interpretation as a condition of general education will not be discussed at length; but science teachers as a

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<sup>7</sup>Leighton H. Johnson, Fostering General Education in the Community College, Professional Series Bulletin No. 14 (East Lansing: Michigan State University, 1956), p. 3.

<sup>8</sup>John P. Wynne, General Education in Theory and Practice (New York: Bookman Associates, 1952), p. 43.

<sup>9</sup>Ruth E. Eckert, Outcomes of General Education—An Appraisal of the General College Program (Minneapolis: The University of Minnesota Press, 1943), p. 9.

whole, because of the nature of their training, are very conscious of the needs for analytical and critical thinking. This thought is developed further in Chapter IV and is mentioned at this point because in informal conversation so many expressed the belief that development of analytical and critical thought are prime characteristics of general education. Those including this in their definitions expressed the idea that more important than anything else is the analytical approach to knowledge.

General education is that which develops insights through which the student may expand his concepts and improve his way of thinking. "Intelligent and purposeful behavior must be undergirded by a deep and broad insight into human motivations and achievement."<sup>10</sup> As insights are developed understanding will grow. The use of understanding within the definition is found in the statement, "General education . . . is concerned with giving all students, regardless of the later area of specialization, a basic understanding, . . ." or, expanding this idea, "The end of general education is integrated understanding."<sup>11</sup>

Two of the definitions obtained in the interview had understanding and insight as a part. A president used the expression "realization of the breadth and depth of life." The dean of the same school says that general education is that which leads to "broad insight into life, its areas and objectives." If one may presume that intelligent communication depends upon understanding, it may be assumed that the idea of one who states that "general education is a basis for intelligent communications with each other" is also based upon the quality, thoughtful understanding.

<sup>10</sup>Ibid., p. 9.

<sup>11</sup>Cunningham, op. cit., pp. 10-11.

General Education as a Means of Developing  
Certain Qualities in the Student

Many definitions or parts of them are stated in terms of changes expected within the student. This is true both in the definitions of authors and of our respondents. One writer says that "general education determines the personality and character of a people."<sup>12</sup> Some will observe that this quotation speaks of "a people," but the character of a people is a composite of its individuals; therefore, we may reason that general education is something which can influence both the character and personality of the person.

There are many writers who look to change in the student as a characteristic of general education. Johnson says:

General education . . . refers to education which helps develop thoughtful, rational, informed individuals. . . . General education is a means of developing a well-rounded individual—one who recognizes the principal areas of human knowledge, who sees interrelationships in human experiences, who appreciates various methods of finding truth, who is acquainted with the great questions which confront thinking man, and who is ready to participate as a responsible citizen in the progress of a free society.<sup>13</sup>

Some differences may be found in the approach to the development of the individual as a part of the definition of general education. An example which comes from one writing concerning liberal education says, "General education has two aspects, social transmission and individual development."<sup>14</sup> Another looks upon general education as "preparation of youth to deal with the personal and social problems. . . ."<sup>15</sup>

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<sup>12</sup>Wynne, op. cit., p. 7.    <sup>13</sup>Leighton H. Johnson, op. cit., p. 3.

<sup>14</sup>Cunningham, op. cit., p. 8.

<sup>15</sup>Clarence H. Faust, "The Problem of General Education," The Idea and Practice of General Education, ed. F. Champion Ward (Chicago: The University of Chicago Press, 1950), p. 6.

Livingstone holds a philosophy of education which is concerned with the individual and is highly compatible with that of general education. He says, "The real benefit of school life . . . is its effect on character. It is not a question of what the ordinary girl or boy knows or does when they leave school, it is a question of the interests and tastes they carry with them into life."<sup>16</sup>

The idea of values is stated or implied in a high percentage of definitions of general education. The generally educated person studies or has a knowledge of those things which have broad human values. A previous quotation stipulated that general education should be in areas of learning which are by tradition recognized as valuable.

Personal adjustments made by the students and qualities developed in them are approached in a more specific way by a number of writers and respondents. The respondents speak of social assurance while Corey writes, "Unless formal education makes a big difference in the success with which . . . men and women are able to make the adjustments . . . in an era of change, the education is not worth very much."<sup>17</sup>

Six of the interviewees used the expressions "the whole man" and "a better life" in their definitions. They considered general education as ubiquitous in the total life activity of man. The number who have included qualities of development of the whole student was not as great as was expected by the writer, yet the reason may not lie in the rejection

<sup>16</sup>Sir Richard William Livingstone, On Education: The Future in Education and Education for a World Adrift (Cambridge, England: Cambridge University Press, 1954), p. ix.

<sup>17</sup>Stephen M. Corey, Action Research to Improve School Practices (New York: Bureau of Publications, Columbia University, Teachers College, 1953), p. vii.

of a student-centered program. There is a natural tendency on the part of many to avoid overused expressions. Some of these such as "student-centered," "the whole man," and "a better life" have, in the minds of a number, become trite. In addition, they lack the specificity which some seek in formulating their definitions.

Representative of the idea and manner in which different respondents expressed their concept of general education as being of the whole person are these statements: "Educate the whole man to take his place in society," and, "General education makes provision for education of the individual as a whole." Two other statements refer to the kind of life or the kind of person we wish to develop as a result of our general education program. They are "education that tends to make a person a better person," and "to educate so that the educated may live more abundantly."

General education was defined by one college president as that which produces "appreciation of the entire scope of living." It is a short statement, yet as one dwells on the full meaning of appreciation and joins that with the all-inclusiveness of the entire scope of living, he finds it terse but rich, dealing both with personal ends sought and the educational scope of the movement.

There is much in professional publications concerning general education as a means of passing on our cultural heritage; however, only three interviewees included this idea in their answer to the question. The persons stating this characteristic in their definitions were not from the same school, but they were consistent in the expression of their concepts, indicating that the definition was influenced by their reading. They used such statements as, "that which contributes to general culture," "the



transmission of cultural heritage," and "the attainment of knowledge of the culture of the past."

General education as a developer of social assurance is a worthy objective and one which can be attained to a significant degree; but, surprisingly enough, only two included it in their definitions. One said, "General education is a phase of education designed to help the individual feel at home with people of other interests," and another, "General education is designed to prepare the student to hold his head up in just about any kind of endeavor."

Interspersed in many statements will be found the idea of education for enjoyment, pleasure, and leisure time with various fields stressing different phases of general education. Industrial arts, for example, includes as one of its goals the capacity to use profitably and enjoyably a person's leisure time, while the fine arts stress enjoyment and appreciation of that which is beautiful.

#### General Education as a Preparation for Life in a Democracy

The Dewey influence, as we may have observed, is discernible in a number of the definitions for general education. This appears when we speak in terms of change within the student and, as we shall see in the following definitions, in terms of a preparation for life or citizenship.

Probably the best known definition comes from the Harvard Report which says in part that general education is "that part of a student's whole education which looks first of all to his life as a responsible human being and citizen."<sup>18</sup> A number of definitions which vary in semantics

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<sup>18</sup>Harvard Committee, General Education in a Free Society: Report of the Harvard Committee (Cambridge: Harvard University Press, 1945), p. 51.

more than in emphasis are modeled about this. One says that general education is designed to produce a "well-rounded individual . . . who is ready to participate as a responsible citizen in the progress of a free society."<sup>19</sup> Another says, "General Education is that which prepares young people for their common activities as a citizen in a free society."<sup>20</sup> Adding variety to definitions rather than changing actual meaning, others use such terms as "democratic society," "free society," and "American society."

The criterion of general education as that which prepares for a common end is by far the most frequent definition expressed or implied by writers in the field of general education. The definitions cover the use of knowledge as needed in responsibilities, privileges, citizenship and other things. A condition which will have wide acceptance by proponents of general education is that we wish to give people a universal core of learning. The whole idea of a common end is so closely intermingled with that of education for citizenship and for life that the major portion of the quotations relative to this goal have appeared in previous sections.

The interviewees may have assumed that, since the study is in the general education of American students, it would be understood that the education is for citizenship in a democracy. However, some statements included this idea of democracy and citizenship in phrases such as "life in a democracy," "looks to life as a citizen," "looks to life as a responsible human being and citizen," "this knowledge which will make of us a better citizen," "that education required of all citizens of a society,"

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<sup>19</sup> Leighton H. Johnson, op. cit., p. 3.

<sup>20</sup> Earl J. McGrath (ed.), Science in General Education (Dubuque: Wm. C. Brown Co., 1948), p. v.

and "to educate people as free citizens in our American Democracy."

Two of the individuals simply referred to the definition contained in the Harvard Report, while another referred to the local school catalog. Since the Harvard Report looks to the development of the individual as a responsible being and citizen, we can place these two with those who define general education in terms of citizenship.

#### General Education as a Method of Instruction and Learning

Some will hold that essentially general education is not something new but primarily a change in methods of instruction. It is a protest, ". . . not so much of the traditional objectives of liberal arts, as the traditional methods for achieving their objectives."<sup>21</sup>

In discussing general education as a movement, attention was directed toward learning which immediately leads our thoughts to methods of learning and instruction. Wynne says, "General education is primarily a function of method."<sup>22</sup> Others say in effect that it is different from other forms of education in emphasis and approach and that this difference may be simply the way students are treated during their study.

Another viewpoint which is worthy of our consideration is that of general education as a method of improving learning. One approach to this is through curriculum development. Corey<sup>23</sup> holds that better learning is the central purpose of all curriculum development. Continuous through the

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<sup>21</sup>D. Ivan Dykstra, "Special Problems of Smaller Colleges," Current Issues in Higher Education, 1956: Resources for Higher Education, ed. G. Kerry Smith (Washington, D.C.: Association for Higher Education, 1956), p. 244.

<sup>22</sup>Wynne, op. cit., p. 26.

<sup>23</sup>Corey, op. cit., p. viii.

definitions of general education is the pattern of development and change of curriculum built about methods of instruction and improved learning.

Most conversations with the teachers interviewed soon turned to methods of instructions, so it seems peculiar that instructional methods were not given as a characteristics of general education at this point of the interview. Such, however, is the case, indicating that general education as a method of instruction or a way of learning has not been considered by these people as a part of the definition. The exceptions to this lie in the use of specific phrases such as "rationalization," "critical analysis," "the scientific method," and "an analytical approach to knowledge." Reference has been made to these previously. An interviewee says that courses should not be taught as though each student might become a specialist in physics or chemistry or other areas.

A very significant contrast to be observed from this part of the discussion is that authors writing concerning general education are very conscious that the methods used in instruction point to a characteristic of the movement.

#### General Education in Terms of Curriculum and Integration of Knowledge

There is some similarity between this section and that of general education as knowledge or information from selected subject areas. But, because curriculum and integration are involved in the success of the program, it is important that the degree to which the authors and interviewees include these in their definitions be discussed.

Writers on general education do not often turn to curriculum alone as a way of defining general education; however, they may use the idea of

integrated study for this purpose. A few direct references point to this fact. Judson Butler says, "The means of general education is integrated knowledge and understanding."<sup>24</sup> Other references refer to unity and interrelationships as features of integration. The generally educated person is that one "who sees the interrelationships in human experience. . . ."<sup>25</sup> is the view of one, while another says, ". . . the student is stimulated and encouraged in many ways to develop a frame of reference into which ideas or events will fit in their proper relations."<sup>26</sup> A like idea taken from another quotation shows the earmarks of a biologist, it states that "general education yields a sense of life and of education as a living unified organism, functional, and not made up of individual blocks of dead matter."<sup>27</sup>

The implications inherent in an integrated curriculum are much broader than one built on subject areas alone. One teacher says the identifying characteristic of general education lies in its curriculum. Another states that general education is a form designed to enrich curriculum. A third expresses the same idea when he says, "It gives students the information they would miss in an ordinary course." A statement that general education is something that "draws from as many divisions of the college as possible," also suggests that general education is a curriculum

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<sup>24</sup>Judson R. Butler, "The Integration of General Education," Issues in Integration: The National Workshop of the Foundation for Integrated Education, ed. Judson R. Butler (New York: The Foundation of Integrated Education, Inc., 1948), p. 12.

<sup>25</sup>Leighton H. Johnson, op. cit., p. 3. <sup>26</sup>Eckert, op. cit., p. 6.

<sup>27</sup>Malcolm S. MacLean, "A College of 1934," Journal of Higher Education, XIII (June, 1934), 241.

within the curriculums of the college.

Those who demonstrated great enthusiasm for the program or have studied rather extensively were almost unanimous in acknowledging the need for greater integration. In one case "an integrating experience" was designated as a characteristic of general education; and another said that general education must be "an integrated education." Other statements were less specific but indicated the same trend of thought. "The right relationships between special training and transfer of cultural heritage," "giving him an over-all picture of education," and "to find more about his own total aspects of life," all refer to the desirable interrelationships. The exact meaning which was to be conveyed by the statement "to find more of his total aspects of life" may be a little vague or may simply refer to the breadth desired in general education, but has been interpreted here as implying learning more from the various fields and their relationships.

#### Miscellaneous Ideas on the Meaning of General Education

There are some who would define general education in terms of outcomes. If one recognizes this as the proper approach, the goals should be established, then the definitions could be written in terms of aims. Dykstra is one who would concur in this procedure. He says that its objectives should be "defined in terms of behaviors which are desired in the college graduates in their nonprofessional contexts. . . ." <sup>28</sup> B. Lamar Johnson says, "General education may then be tentatively defined as a process of achieving goals. . . ." <sup>29</sup> In this one work, or at conferences on general education where the Johnson influence is present, it may be seen

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<sup>28</sup>Dykstra, op. cit., p. 245. <sup>29</sup>B. Lamar Johnson, op. cit., p. 22.

that the approach to the problem is through goals.

A common approach to the definition of general education is to compare it to liberal arts, vocational education, or specialization. Another approach is to state that which it is not. "General education . . . is the antithesis of academic isolationism of separation, of narrow specialization, and of educational atomism generally."<sup>30</sup> On the other hand, the President's Commission reports, "General education is the term that has come to be accepted for those phases of nonspecialized and nonvocational learning which would be the common experience of all educated men and women."<sup>31</sup> In this connection an obvious fact stands; general education may be found in all educational endeavors. It is nonvocational, yet it exists in all vocational experience.

Authors are anxious that the relationship between general education and vocational education or specialization shall be understood. B. Lamar Johnson says, "General education is complementary to but different in emphasis and approach from, special training for a job, for a profession, or for scholarship in a particular field of knowledge."<sup>32</sup> Eckert is making the same point when she says, ". . . general education is by no means antithetic to vocational education, it is distinguished primarily by the fact that it represents a preparation for the more common responsibilities and privileges. . . ."<sup>33</sup> Leighton Johnson has this to say:

General education is a promising remedy for those who are troubled

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<sup>30</sup>Butler, op. cit., p. 22.

<sup>31</sup>President's Commission, op. cit., p. 49.

<sup>32</sup>B. Lamar Johnson, op. cit., p. 2.      <sup>33</sup>Eckert, op. cit., p. 9.

by the fact that too many graduates of our colleges, universities and professional schools are highly trained in specialized fields, but lack understanding of the total reality and the common problems of mankind.<sup>34</sup>

This quotation recognizes that specialization is not a sufficient education in our society and that general education is designed to complement other forms of education.

There are a number of ideas, some limiting and others broadening the scope of that which we call general education. One interviewee restricts it to "any type of formal learning." Another called it "what you can do after you have forgotten everything the professor has said." A second definition, which leans to the practical outcomes, is found in the statement that general education "broadens the scope of skill."

The statement, "General education is that which you would expect an educated man to have" seems a good one, but unlike the definition of the previous paragraph, it loses strength as we attempt an analysis of it. In contrast with this is another statement which places a definite charge and obligation by saying that it is that education "for which society has a right and obligation to insist upon the student gathering." Some may class this as dictatorial, therefore, not suited to a democracy. This is not the place for a full discussion of that point, but any democracy can continue to exist only if its citizenship is well informed. Society has, then, both the right and obligation to impose those things necessary for its preservation.

A number of authors, in order to assure their readers that general education is not something new to the schools, especially to the colleges

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<sup>34</sup> Leighton H. Johnson, op. cit., p. 3.



of our nation, have started their definitions with the statement, "General education is a movement." This idea is probably stressed more by authors tracing the history of the program than by those developing concise definitions. McConnell states, "General education is a movement which began as a re-examination of the nature and purposes of liberal education and which is leading to a revitalization, . . . and perhaps to a complete reconsideration of the nature of the learning process."<sup>35</sup> Leighton Johnson may have been referring to this definition when he wrote, "General education has been characterized as a movement which endeavors to reconsider and revitalize traditional liberal education with the demands of a modern democratic society in mind."<sup>36</sup>

There were two definitions by respondents which mentioned the guidance potential of general education. They stated that general education is in part "information on which to make choices of specialization" and "a way to make an intelligent selection of life's work." Education and guidance are inseparable. Many of the science teachers interviewed pointed to the number of students who have gone on to specialize in some field of science after completing the general courses. This would indicate that general education is an important factor in guidance, especially in vocational choice.

#### Definitions Lacking a Positive Approach

Four of those interviewed took one form or another of the "don't

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<sup>35</sup>T. R. McConnell, "General Education: An Analysis," The Fifty-first Yearbook of the National Society for the Study of Education, Part I: General Education, ed. Nelson B. Henry (Chicago: The University of Chicago Press, 1952), p. 1.

<sup>36</sup>Leighton H. Johnson, op. cit., p. 3.

know" attitude. One said, "I never tried to define general education." He later gave an excellent definition. Another said, "It is hard to truly define." Still another replied simply, "I don't know." The last of the responses grouped in this paragraph was, "We tried to define it in teachers' meetings. There were no conclusions. Everybody thought differently."

There was a minimum of negative attitude toward the question. A reply was to the effect that too much time is spent in defining and not enough in doing. One defined general education as courses for those who do not have the aptitude for success in conventional liberal arts courses.

A limited number of the people interviewed had no statement relative to what constitutes general education. It was suggested that the extemporaneous nature of the replies may have accounted for this, yet one finds several writers in the field who attempt no definition. They base these omissions on the fact that there is no clear-cut definition, that there are as many concepts of general education as there are ways of life, or that there is no definite ideology, only an awareness of the need. It is not an easy thing to arrive at an elementary concept of general education, making definition one of the greatest current problems. Barmeier, speaking to educators in behalf of industry, says, "Those of us in business . . . are impressed by the variations in points of view among educators on the subject of general education."<sup>37</sup>

#### A Composite Definition

From a synthesis of the definitions given by the interviewees and

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<sup>37</sup>R. E. Barmeier, "An Analyst's Statement," Current Issues in Higher Education, 1955, ed. G. Kerry Smith (Washington, D.C.: Association for Higher Education, 1955), p. 287.

those studied, one thing stands out; namely, there is no simple definition, and any complete statement must consider the movement as it concerns the student, as it relates to the subject matter, as it concerns the method of presentation or teaching, as it concerns the learning process, as it concerns society, and finally, as it prevails in all education and life activities in general.

Someone has said that there could be as many definitions of general education as there are individuals. This implies that, although we are seeking a common core of knowledge, the outcomes for each student will vary. And certainly, exact conformity of each person is not to be desired even though we are educating for a common end. No definition can be complete for all situations and all persons.

In terms of the student, general education is for all, however, in this study the concern was with the lower division of the college. General education is that which will result in a well-rounded individual who possesses a great breadth of knowledge. He will be a unified person able to see relationships, to think critically, reason analytically, and make intelligent decisions and choices. He will in the process have developed a high degree of understanding and insight, and he will be able to communicate with those in all walks of life. This results in social assurance. All of these lead to the truly cultured and aesthetically appreciative person who has been prepared for the common ends of life, both work and leisure, in the society under consideration.

It has been seen that the materials of general education promote breadth of knowledge and information through the utilization of broad areas of subject matter which are by tradition recognized as valuable. In this

respect it considers the principal areas of human knowledge and requires a basic understanding in several of these. These areas are usually communications, humanities, social studies, physical and biological sciences, mathematics, health, languages, and the practical arts. One other, and very important, criterion for effective general education subject matter remains to be related; namely, that knowledge must be integrated both within areas and between areas of learning if it is to make a lasting imprint on the life of the student.

Frequently in professional literature and in conversation we read or hear the comment that the principal characteristic of general education lies not in the subject matter or the organization of the program, but in the methods of presentation. We know that appreciation of poetry seldom comes from memorizing excerpts of poems and the name of the author, or an understanding of the scientific method through memorization of isolated facts. General education to some is a method of teaching which develops appreciation, understanding, critical thinking, and other aims commonly held desirable. Knowledge of vocabulary and of facts as taught in more specialized courses is, of course, not insignificant, but many of the other outcomes are products of the way of teaching. The manner in which general education differs in the learning process from older concepts of education is indicated here. In brief, the learning will have shifted from emphasis on facts to association and recognition of interrelationships.

General education is for the society in which it is functioning. It is, then, a kind of education which has as its goal successful living in a democratic society. This requires an understanding of the problems and participation in their solution. It requires that a person develop

in his ability to serve, preserve, conserve, and promote the facets of life which make our society.

If all of these enter into general education, it becomes obvious that it has value for all and exists in all experiences. The methods used in teaching and learning, as well as the capacity of the individual to receive it, will largely determine the extent and kind of education each individual will have gained.

Moving from this synthesis of all definitions considered to those of the interviewees only, their statements shall be drawn together into a common pattern for the purpose of writing a composite definition. The discussion to this point has placed emphasis upon words and phrases desirable to make a comprehensive explanation, but at the same time there has emerged the fact that a complete definition must be in terms of the student, the subject matter, the teacher, the aims, and other factors.

From the composite definition one finds that the general education of a person is the learning or knowledge gained in integrated subject areas which are fundamentally nonvocational and nontechnical. These lead to common experiences that produce a better life for the whole man. It permeates every activity and through the development of understanding, insight, and the ability to think critically and communicate intelligently, is preparation for citizenship in a democracy.

This statement does not presume to include all of the conditions given in the answers, but does cover well the characteristics of general education upon which there is some agreement. The concept of general education held by those interviewed is on the whole quite sound. Only one person lacked any knowledge of general education and its meaning. This

is not to be interpreted as meaning that the best informed were not friendly to the movement. The contrary was true, although in many cases their beliefs were shaded by the attitudes developed during specialization. The introduction to the interview and the preliminary conversation seem to have left a few thinking only in terms of the sciences in general education, thus coloring their definitions, and causing them to limit their thoughts and statements to the science area.

A broad view of the general education movement against which to consider the science program in general education is further developed in the next chapter in which the over-all objectives of general education are the topic.

## CHAPTER IV

### THE OBJECTIVES OF GENERAL EDUCATION

The objectives of general education, the discussion of which is the purpose of this chapter, are so closely tied to the definition and the philosophy of the movement that no real line of demarcation can be established between them. Indeed, one would not wish a separation into compartments; but for the purpose of analysis and discussion, it is necessary to establish an order of approach which is consistent with logical development. Consideration of the general philosophy which one holds toward a program is usually considered the best beginning. But, because at the first use of the term philosophy many have their minds diverted to the more complex connotations of the word, interviewees were asked for definitions and aims before they were questioned concerning their personal beliefs concerning general education.

The material utilized in this chapter came from several sources. The first is that taken from publications which deal with the objectives of general education. They furnish the authoritative references against which to make comparative and critical analysis of interviewees' responses. Supplementing these are the objectives of the college as found in their bulletins and an occasional set of objectives which had been advanced by faculty study groups working in the field of general education.

The main source of material was, of course, the many aims stated by the interviewees.

The second question, as it appears in the interview form is, "Will you state the objectives which you consider most significant?" This had been preceded by the request to state a definition of general education. From the explanation given in the introduction and from the wording of the previous question, the respondent understood that the objectives should be for the entire program. This sequence of questions asked had some influence upon the statement of objectives, and to that extent, the question was a leading one.

The interviewees' interpretations of the question suggests another factor influencing the answers obtained. Nearly all of those answering were science majors. In discussing general education their thoughts naturally turned to the science area. Discovering this tendency, the interviewer stressed that the objectives desired were those belonging to the whole movement of general education, not to any specific phase of it; however, a few still stated their aims in terms of their teaching fields.

The difference between aims and definitions being largely one of emphasis, it may appear at times that duplication of discussion between chapters exists. However, an examination of the setting of the discussion will reveal that there is a different approach rather than repetition. Such terms as objectives, aims, goals, and expected outcomes have been used synonymously in this dissertation. They carry a common meaning and equal emphasis.

#### Formal Lists of Objectives

~~Two lists of objectives which are widely known and frequently~~



referred to are those of B. Lamar Johnson and the California workshop group, with which he served as adviser, and those of the President's Commission. They are copied here so that the reader may be orientated with respect to the kind and extent of objectives commonly established and have a ready reference in comparing the aims given by those interviewed. Those of the California group state:<sup>1</sup>

The general education program aims to help each student increase his competence in

1. Exercising the privileges and responsibilities of democratic citizenship.
2. Developing a set of sound moral and spiritual values by which he guides his life.
3. Expressing his thoughts clearly in speaking and writing and in reading and listening and understanding.
4. Using the basic mathematical and mechanical skills necessary in everyday life.
5. Using methods of critical thinking for the solution of problems and for discrimination among values.
6. Understanding his cultural heritage so that he may gain a perspective of his time and place in the world.
7. Understanding his interaction with his biological and physical environment so that he may adjust to and improve that environment.
8. Maintaining good mental and physical health for himself, for his family, and his community.
9. Developing a balanced personal and social development.
10. Sharing the development of a satisfactory home and family life.
11. Achieving a satisfactory vocational adjustment.
12. Taking part in some form of satisfying creative activity and in appreciating the creative activities of others.

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<sup>1</sup>B. Lamar Johnson, General Education in Action (Washington, D.C.: American Council on Education, 1952), pp. 21-22.

From the President's Commission we have the objectives:<sup>2</sup>

1. To develop for the regulation of one's personal and civic life a code of behavior based on ethical principles consistent with democratic ideals.
2. To participate actively as an informed and responsible citizen in solving the social, economic, and political problems of one's community, state, and nation.
3. To recognize the interdependence of the different peoples of the world and one's personal responsibility for fostering international understanding and peace.
4. To understand the common phenomena in one's physical environment, to apply habits of scientific thought to both personal and civic problems, and to appreciate the implications of scientific discoveries for human welfare.
5. To understand the ideas of others and to express one's own effectively.
6. To attain a satisfactory emotional and social adjustment.
7. To maintain and improve his own health and to cooperate actively and intelligently in solving community health problems.
8. To understand and enjoy literature, art, music and other cultural activities as expressions of personal and social experience, and to participate to some extent in some form of creative activity.
9. To acquire the knowledge and attitudes basic to a satisfying family life.
10. To choose a socially useful and personally satisfying vocation that will permit one to use to the full his particular interests and abilities.
11. To acquire and use the skills and habits involved in critical and constructive thinking.

#### Approaches in Formulating Criteria

#### Materials, Methods, and Subject Matter

Since education cannot take place without subject matter and

<sup>2</sup>President's Commission on Higher Education, Higher Education for American Democracy, Vol. I: Establishing the Goals (New York: Harper and Brothers, 1948), pp. 50-57.

because teachers have had years of contact with the knowledge which comprises their field of specialization, it is natural that objectives will frequently be stated in terms of the materials to be taught. While some recognize subject matter as the tools of learning, others will seemingly build their entire set of goals about it, giving as their sole aim the attaining of knowledge of certain subject materials.

Frequently one reads or hears the comment that the principal characteristic of general education lies, not in the subject matter or organization of the program, but in the methods used in presentation. However, many still hold that general education is liberal arts under a new name and that the courses which were accepted as a part of the liberal arts curriculum are also good for general education. Unfortunately, unless they have already been following a pattern of subject organization and of teaching methods which is very like that which has developed for general education, such persons will, in all probability, still be teaching a liberal arts course under the name of general education.

There was much agreement concerning the need for selecting the courses of general education from broad areas of subject matter which have been found by tradition and by adult society to be a valuable part of the knowledge of each individual. Two of the teachers interviewed said that the subject matter should be that which has traditionally shown itself to be of value to all students. A dean expressed almost the same idea, saying, in substance, that the materials of general education should be made up of those things which adult society has found to be desirable.

The areas or divisions most frequently included in a program patterned on subject matter are communications, social studies, mathematics

and science, humanities, health and physical education, practical arts, and subjects which develop the moral and ethical qualities in the individual. The grouping proposed by the curriculum committee of the Oklahoma State Colleges<sup>3</sup> and used by all of them with only slight modifications or variations will appear again in Chapter IX under the discussion of course of study and curriculum.

Conflicting attitudes noted in the comparison of subject matter of liberal arts and general education did not appear frequently in statements of the interviewees. However, a departmental chairman made a comment representative of the dissident when he said, "If by general education you mean first courses in chemistry, botany, physics, or other areas, then I agree that general education is a good thing." He would throw out the courses which have been organized to meet the needs of modern education for all.

The points of emphasis. In considering the subject matter for general education, two differences stand out from that of either liberal or special education. The first of these is that the student shall have an understanding of the ideas and principal concepts found in the body of knowledge and the other is the emphasis upon the integration and inter-relationship of knowledge. The method of general education instruction emphasizes the development of appreciation, understanding, and critical thinking along with the attainment of subject matter. Knowledge of vocabulary and of facts is, of course, a part of these aims. The contrast,

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<sup>3</sup>Intercollege Curriculum Committee, A Resolution Regulating the Curricula at the Six State Colleges (Ada, Oklahoma: lithographed, 1952). Copies in the Libraries at East Central State College, Ada, Oklahoma, and Central State College, Edmond, Oklahoma.

however, lies in the fact that general education will have shifted from emphasis on factual learning to learning by association and recognition of interrelationships. There are general education advocates who build their entire program around this method of presentation.

Subject matter and methods have their important place in the aims of general education, yet many see beyond them to the ultimate goal in terms of changes within individuals. These often built their statements of objectives around the expected outcomes in terms of the student. Both instruction and learning become ancillary to the attainment of the final product.

### An Analysis of the Objectives

#### The Development of Knowledge as a Goal of General Education

Some difficulty could be encountered at this point if an attempt were made to consider all of the implications involved in the interpretation of knowledge, learning, and information as used by the authors cited and those interviewed. Fortunately this is not necessary since elaboration and refinement will develop as further objectives are considered. A study of the references to knowledge as a goal indicates that knowledge, learning, and information are treated as near equivalents in meaning. An appreciable consistency with respect to vocabulary exists between the interviewees and authors writing in this field. Such differences as may appear will develop in the discussion which follows.

Knowledge defined. Knowledge has no limits. This point stands so firmly in the minds of all that it does not need to be stated, yet the recognition of the fact leads to statements designed to limit the extent

of knowledge as it applies to general education. Another characteristic of knowledge is that it exists in all goals of education. It is the tool of general education and, as such, becomes an inseparable part of all statements of aims, whether directly stated or implied. The writers recognize as self-evident this interaction of knowledge or information as an integral part of education; therefore, they present fewer lists of aims which involve the gaining of knowledge as one of the goals of general education. The interviewees used the idea that knowledge had to be attained as a beginning point for their discussion and were more inclined to supplement their statement of goals with details. This leads to a broader discussion of things learned than would have otherwise been justified.

Scope of knowledge. The knowledge needed for general education has several characteristics. The most frequently noted by writers and interviewees is that it shall be broad knowledge. An example in terms of subject areas is that of Leighton H. Johnson, who says, "General education . . . involves knowledge of three kinds: knowledge of the universe in which we live—the natural sciences; knowledge of the behavior of men in social organizations—the social sciences; and knowledge of human attitudes, hopes, and aspirations—the humanities."<sup>4</sup>

Breadth of knowledge. References which do not identify the subject areas are more typical of those writers who show their concern for the breadth of knowledge to be found in the general education curriculum.

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<sup>4</sup>Leighton H. Johnson, Fostering General Education in the Community College, Professional Series Bulletin No. 14 (East Lansing: Michigan State University, 1956), p. 4.

Believing that the subject matter is so extensive and the time element in the acquisition of information so limited that all learning cannot be accomplished in the time available in the general education phase of a college student's life, the writers would limit its breadth. The Chicago group reports that "the end of general education can be achieved best by helping students to master the leading ideas and significant facts in the principal fields of knowledge. . . ."<sup>5</sup> Pooley also recognizes that the program of general education cannot become indiscriminately involved in attempting to cover all knowledge. He sees rather that "it is the purpose of the program to sift from the vast array of knowledge the materials which are pertinent to our general knowledge."<sup>6</sup> The things which are common and central to our culture must be selected and made the foundation of our general education curriculum.

Reaching the obvious conclusion that knowledge is not unique to general education and knowing that any well educated person will have a broad knowledge, many writers would eliminate this as a specifically stated goal. On the other hand, those interviewed felt the need to supplement their statement with descriptive detail. This leads to more complete listing of the subject areas than would be expected from those who could have time available to word and edit carefully their statements of expected outcomes. Also, in studying the replies of those interviewed, it was found that several objectives were often included in the same

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<sup>5</sup>Reuben Frodin, "Very Simple, but Thoroughgoing," The Idea and Practice of General Education, ed. F. Champion Ward (Chicago: The University of Chicago Press, 1950), p. 59.

<sup>6</sup>Robert C. Pooley, "General Education and the Cultural Heritage," College and University Bulletin, VII. (November, 1954), p. 3.

sentence. It is only by dividing these many statements and reassembling them under common headings that one can bring order and arrive at a systematic pattern of aims. However, to be certain that by lifting from context, the thought has not been changed, the discussion of any given point may at times include ideas which will be considered at greater length under another heading.

A summary of statements of interviewees shows that the most common stipulation relative to knowledge was that it be broad knowledge. As with the authors writing on the goals of general education, the idea of broad knowledge ranged from the implied, to the very general, to the specific, to some description of breadth in terms of subject areas. A dean stated that, as he saw general education, its aim was to introduce the student to a broad field of knowledge. Two teachers held similar ideas. One felt that general education is to broaden a person's knowledge while the other added some limitation by suggesting a broadening of knowledge through the use of subjects not included in the student's major. On the other hand, it was not an uncommon belief that students will gain the needed general education in their major field through the beginning courses leading toward specialization. One of the college presidents saw the purpose of general education as an attempt to give the student a wide knowledge which will lead to an appreciation of the scope of living. "Wide" was used here in the same sense that others have used "broad."

Not all statements of objectives which looked to a broad knowledge have this as the primary thought. Some expressed a belief that the goal of general education is to acquaint the nontechnical student with as large a body of useful information as possible. The need of breadth of



knowledge is recognized here, although the group has been limited to non-technical students. Two teachers, although expressing their aims in terms of curriculum, also included the extent of knowledge. They thought the aim of general education was to enrich the curriculum or to provide a general enrichment leading to a greater range of knowledge. One of these was more specific in the statement of outcomes held desirable for the student, believing that the purpose of general education is "to help the student, through a broad curriculum, to find his interests."

Areas of knowledge. A dean, a department chairman, and three teachers referred to areas in which knowledge should be gained. In only one were these areas named. The dean would acquaint the student with the major areas of learning which are the common denominators of educated persons in a free society. This objective was also used by two teachers from the same institution. At this school a faculty committee had set up a list of objectives which were adopted by the faculty. The influence of such a study was readily discernible as the interview progressed. Another teacher would be certain that the student be provided education in several areas, that he may know more about the total aspects of life.

Functional knowledge. The discussion of the breadth of knowledge used such modifiers as "broad," "wide," "basic," "general," "essential," "a large body of," "an accumulation of," "a sufficient amount of," and "the major areas of" knowledge. However, these are descriptive terms which give little insight into the functional aspects of the information. In terms of change within the pupil, the use of knowledge is more important than is the range of learning.

With no attempt to evaluate importance, several of these functional

qualities in the development of knowledge will be discussed. That which is of common concern to all is very closely allied to areas of learning but in turn suggests a useful knowledge; therefore, it serves here as a transition to more functional objectives.

Our interviewees recognized this need for a core of knowledge which is of concern to all. One said that the student should acquire a body of information essential for successful living. Another stated that he should study from areas which serve as the common denominators of educated persons in a free society. In various ways, other replies indicated a recognition of the need for universal knowledge. It is the material upon which general education operates.

Understanding. The least complex of the statements which set understanding as an objective of general education is that from the President's Commission. One of their objectives is for the student "to understand the ideas of others and express one's own ideas effectively."<sup>7</sup> This last part might be considered as communications, such as is taught in the language arts, or it could refer to sufficient understanding of vocabulary and subject matter in the various areas to permit intelligent listening and conversation.

B. Lamar Johnson lists two objectives which look to the degree of understanding of the knowledge acquired by the student. One of these aims toward the student's "understanding his cultural heritage so that he may gain a perspective of his time and place in the world." Another calls for "understanding his biological and physical environment that he may

<sup>7</sup>President's Commission, op. cit., p. 52.

better adjust to and improve that environment."<sup>8</sup>

Faust also stresses outcomes of knowledge with respect to understanding as follows:

Without a broad base of analyzed experience with particular works of literature, music, and art, . . . historical information which may be conveyed to students about these matters is hardly intelligible, certainly is not real knowledge, and, above all, provides students with little preparation for proper understanding.

Even those facts, moreover, which maintain their scientific status cannot be truly grasped and really understood as mere items of information retained in memory. They come to be intelligible, come to be truly known and significant, only through understanding the methods by which they have been established.<sup>9</sup>

Integration of knowledge. Another characteristic of the knowledge which is acquired in general education is that it brings together ideas. It is an integrating force, both within areas of learning and between these areas. This matter of knowledge for the development of interrelationships was expressed well by Faust when he wrote, "The college recognizes its obligation to equip the student with the knowledge and intellectual disciplines necessary for the integration of the different fields of knowledge."<sup>10</sup> One respondent came more directly to the point when he said that the student should be made acquainted with the interrelationships of the subdivisions of knowledge. This integrated knowledge suitable for general education is, then, a thing to be desired because society has found it to be true, because it brings appreciation and understanding of life, and because it has practical value in fitting the needs of society.

<sup>8</sup>B. Lamar Johnson, op. cit., p. 26.

<sup>9</sup>Clarence H. Faust, "The Problem of General Education," The Idea and Practice of General Education, ed. F. Champion Ward (Chicago: The University of Chicago Press, 1950), pp. 22-23.

<sup>10</sup>Ibid., p. 23.

Does it make a difference what kind of knowledge is acquired in general education? The authors to whom reference was made and the interviewees agree that it does. A common core of knowledge is needed by all individuals who are to function as citizens. Also, the knowledge acquired in general education will lead to other values. Wise discussion will be founded on this fund of information and, if one accepts that any transfer of learning takes place, it should do so through an integration of knowledge.

#### Education for Citizenship in a Democracy

One of the goals of general education is, not only to impart something to the student in the way of facts and skills, but also to bring about a change within the individual which will affect his conduct and attitudes. The many ways in which different individuals approach this goal make it nearly as complex as the statements relative to knowledge as an aim.

Education for citizenship or for living is a common objective given both by the general education enthusiast and those who tolerate the movement as a necessary delay along the road to specialization. Citizenship is a broad term which implies many things not suggested by the word "living"; however, some who set education for living as a goal are possibly thinking of the same objective.

Education for a good life. In education for citizenship one seeks to know, first, what kind of citizen is desired. "Education for a good life" is an expression which is often read or heard in educational circles. This is typical of the statements on which almost universal agreement is

obtainable, yet when analyzed they are found to have little specific meaning. A check of several lists of published objectives did not disclose the use of the development of a good life as an aim of general education, but three of our respondents did use it, one placing this as the first objective. Two others, using almost identical statements, would guide the individual in developing a personal philosophy which leads to happiness and a good life. All of these aims were from administrators, the two very similar aims having come from members of the same institutional staff.

Education as a guide to moral and ethical standards. The goal of developing high moral and ethical standards is more closely related to the good life than the others, but it remains an integral part of citizenship. One of the student-centered goals given in the California study is the "developing of a set of sound moral and spiritual values by which he guides his life."<sup>11</sup> The President's Commission on Higher Education gives the aim, ". . . to develop for the regulation of one's personal and civic life a code of behavior based on ethical principles consistent with democratic ideals."<sup>12</sup> Hutchins, on the other hand, specifically eliminates the development of character in the individual as an aim. He says, "We have excluded . . . character building."<sup>13</sup>

The interviewees made no direct reference to the moral and ethical development, except as it may have been implied in reference to the good

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<sup>11</sup> B. Lamar Johnson, op. cit., p. 21.

<sup>12</sup> President's Commission, op. cit., p. 50.

<sup>13</sup> Robert Maynard Hutchins, The Higher Learning in America (New Haven: Yale University Press, 1936), p. 77.

life. The reason for this probably lies in the basic assumption that there should be a divorcement of religion from the state schools, and that the development of the moral and ethical side of the individual is pre-eminently the responsibility of the church and the home. None would deny, however, the importance of this phase in the development of each person. Nearly all church schools, which have retained strong departments of religion, give priority to the development of the moral and spiritual side of the individual. It can be hoped that it is not neglected in our state colleges, but that it may come as an indirect development of general education, largely the humanities. It can, however, be integrated with all learning. For those who wish to direct the progress of the student into stronger moral and ethical concepts, almost any subject has possibilities for insights into a higher plane of life ideals.

Development of responsible citizenship. General education should lead to responsible and successful citizenship, as a survey of objectives will indicate. Here again a contrast appears when comparing the objectives found in literature with those of the Oklahoma group interviewed, the writers placing more emphasis on this aim than did the interviewees.

One of the aims taken from the President's Commission is "to participate actively as an informed and responsible citizen in solving the . . . problems of one's community, State, and Nation."<sup>14</sup> B. Lamar Johnson recognizes this outcome in the objective which looks to student competence in "exercising the . . . responsibilities of democratic citizenship."<sup>15</sup>

<sup>14</sup>President's Commission, op. cit., p. 51.

<sup>15</sup>B. Lamar Johnson, op. cit., p. 21.

Faust takes a very serious view of the responsibility for citizenship as an objective. He says, "It is, therefore, one of the important functions of general education to prepare people to exercise wisely the power which will be thrust upon them as citizens of a democracy."<sup>16</sup> Syracuse University offers a course, "Responsible Citizenship," indicating the esteem in which this aim of general education is held by them.

Five respondents gave responsible citizenship, or statements which can be interpreted as meaning this, as one of their aims. Only one of these was given by a classroom teacher, and he said that it should provide the basis necessary for citizenship, not specifically stating that he looked to responsible citizenship as a goal. The interpretation must come from another part of his discussion in which the development of a "better man" was mentioned. Will not a "better man" be a more responsible citizen? "To develop responsible citizenship in a democracy," and "to prepare the student for responsible citizenship in the community and nation and world" were other expressions of this aim.

Training for intelligent citizenship. The goals of citizenship also hold that the student should be intelligent and enlightened. Intelligence does not refer in this case to that with which we are endowed, but rather to our awareness and skills.

An objective which emphasizes this point and spells out the qualities desired was formulated by a faculty committee at Syracuse University. It states that the student is to be prepared to:

take his place in society as an informed, responsible, and active

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<sup>16</sup>Faust, op. cit., p. 6.

citizen, believing in the value of individual and representative participation in public affairs; having insight into the nature and role of democratic government; devoted to the basic principles of freedom and equality; and world-minded in his understanding and appreciation of the universal search for peace.<sup>17</sup>

Another set of committee objectives would have the individual "do his part as an active and intelligent citizen in dealing with inter-related, social, economic and political problems of American life. . . ."<sup>18</sup>

In listing responsibilities of citizenship as a goal of general education, relatively few included the analytical approach to the problems. This is an instance in which the false assumption is made that if the principles of democratic citizenship are known and the individual is a participant, he will also think critically on his problems. There are, however, objectives which approach the conditions of analytical participation and knowledge of principles in citizenship directly, such as that of Stickler in the previous quotation, or of McGrath who says the good citizen "must understand his relationship with the members of the body politic."<sup>19</sup>

Several of the respondents showed awareness of this need for an analytical approach to citizenship and an understanding of the democratic principles. A teacher said we need to teach the student to take an analytical approach to problems as well as to accumulate knowledge. Because

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<sup>17</sup> C. Robert Pace, "Organization and Administration of General Education: An Introduction," Organization and Administration of General Education, ed. W. Hugh Stickler (Dubuque: Wm. C. Brown Co., 1951), p. 6.

<sup>18</sup> Dorothy Leemon McGrath (ed.), A Design for General Education—Reports of Committees and Conferences, (Washington, D.C.: American Council on Education, 1944), p. 14.

<sup>19</sup> Earl J. McGrath et al., Toward General Education, (New York: The Macmillan Company, 1948), p. 47.



intelligence is a word of extensive meaning, the person who included in his goals the idea that the student should be politically intelligent undoubtedly had in mind an approach to the problems of citizenship as well as a knowledge of the factors involved in citizenship. Some of the respondents looked to the understanding of governmental principles in a democracy, but did not continue or indicate the use to be made of this information.

Only one of the respondents gave an objective using the term "intelligent citizenship." However, because it was strongly implied in other statements of aims, it is possible the others considered it self-evident.

#### Education for the Student's Role in Society

Personal and social adjustment. That the citizen we seek should be socially competent and well adjusted is an aim given prominence by many writers on general education. The American Council on Education accepts that general education should lead the student "to attain a sound emotional and social adjustment through the employment of a wide range of social relationships and experience of working cooperatively with others."<sup>20</sup> The Syracuse group would have the student "prepare himself for satisfactory . . . social relationships."<sup>21</sup> Two succinct statements of the aims are to prepare the student "to attain a satisfactory emotional and social adjustment,"<sup>22</sup> and to aid him in developing a balanced "personal and social adjustment."<sup>23</sup>

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<sup>20</sup>Dorothy Leemon McGrath, op. cit., p. 14.

<sup>21</sup>Pace, op. cit., p. 6. <sup>22</sup>President's Commission, op. cit., p. 53.

<sup>23</sup>B. Lamar Johnson, op. cit., p. 27.

Here, again, the respondents were very indefinite on this point. One spoke of the development of "certain intangible qualities which lead to control of conduct." A second would have us "educate the whole man to take his place in society." A third would "instill in the students the knowledge, skills, and attitudes which will enable them to take their place as fine members of society." This last statement covers the aim of social competence and the adjusted person very well.

Economic efficiency. Emphasis is changed now from the development of the personal qualities of the student to a consideration of him as a participant in society. In this respect the major portion of his activities and responsibilities is going to be economic, beginning with the ability to produce. This involves a prior condition of having made an intelligent selection of a vocation followed by planning and preparation to attain skill and competence. "Achieving a satisfactory vocational adjustment"<sup>24</sup> is the first step in achieving this goal. B. Lamar Johnson elaborates by saying: "The importance of vocational adjustment is further heightened by recognition of the fact that through work for an appropriate vocation each citizen can make his major contribution to the development of his community, state, and nation."<sup>25</sup>

Turning to the objectives established by the President's Commission, one finds less attention given to the economic phase as part of vocation except as implied in the qualification of "socially useful," as stated in the tenth objective.<sup>26</sup> The objectives of the American Council

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<sup>24</sup>Ibid., p. 28.

<sup>25</sup>Ibid.

<sup>26</sup>President's Commission, op. cit., p. 56.

include much of both the social and economic factors. They suggest that general education leads the student to choose a vocation that will make the optimum use of his talents.<sup>27</sup> MacLean gives one of the most elaborate discussions of job choice by tying in knowledge of self, interest, abilities, and aptitudes as prerequisites to selecting a career which will make him economically productive.<sup>28</sup> Also, many generalized references for responsible citizenship include the selection and planning for economic productivity.

An aim given by one of the interviewees was "to give the equipment needed by all individuals to take their places as productive citizens economically." Two respondents went no further than suggesting that information be imparted which will lead to a choice of life's work. Another person would have us be certain that those things necessary to develop a well-rounded individual in his field of competency be given. That would lead to more successful productivity. The same concept of "rounding out the individual" exists in nearly all goals. It implies much, is acceptable to nearly everyone, yet is as vague as the direction "over yonder." Others have recognized this goal through inclusion of such conditions as "economic efficiency" and "intelligent citizenship economically," or, as one says, "A good general education helps them understand their vocation."

Family obligations. In the selection of a career by which a person will be a productive member of society, two other steps follow. The

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<sup>27</sup> Dorothy Leemon McGrath, op. cit., p. 15.

<sup>28</sup> Malcolm S. MacLean, "Conflicting Theories of General Education," The American College, ed. P. F. Valentine (New York: The Philosophical Library, Inc., 1949), p. 110.

citizen has an obligation to support his family, but holding a job and having an earning capacity does not necessarily mean that he will do so. An interviewee included with his aim of economic efficiency the development of successful home participation, which, without a doubt, would include family support. The second of these steps is that he should be able to manage this income. The amount of income does not limit the extent to which the person can grow in knowledge and moral stability, but it does limit the degree to which he can prepare for financial emergencies. It is the obligation of our schools not only to lead the student to an awareness of the riches inherent in himself, but also to teach the economic principles by which he can best manage the material things which accrue to him. It may be that the respondent who made the allusion to the development of certain intangible qualities was thinking somewhat along this line for this is the kind of knowledge essential to successful living.

Community participation. In our society the intelligent citizen will understand the economic problems of society well enough, not only to govern his own life, but also to extend his influence to the problems of his community. In this respect the kind of citizen desired is one who can see that rehabilitation of the physically handicapped results in a two-way return; namely, society will benefit and the individual will enjoy greater independence. The same qualities will lead the person to vote for bond issues which will bring wealth to the community or to support other worthwhile endeavors.

Character building and personality growth. The personal development of the individual and the building of values plus the life adjustments

founded on these values represent with some groups and schools a major goal of general education. There are schools which provide courses having as their major function the personal adjustment of the individual. These courses are often in connection with health education. Neel, reporting on Health and Personal Adjustment in the program at Florida State University, gives a comprehensive description of such a program.<sup>29</sup>

The character of an individual is always in the process of development, and general education can assist in this. Character is such a broad term that the discussion is restricted to those phases mentioned by interviewees. They include development of the personality, social adjustment, family and home relationships, use of leisure time, a wholesome philosophy, freedom from fear and superstition, the achievement of intellectual, aesthetic, and spiritual foundations, and the development of sound physical and mental health.

The development of personality is a goal recognized by some in its entirety and by others only in terms of some of the qualities which make for a desirable personality. Boron considers attitudes contributing to personality adjustments when he sets the objective "to develop an objective self-image, a wholesome attitude of self acceptance, and a constructive, problem-solving attitude toward frustration. . . ."<sup>30</sup> A goal often quoted is that of self realization. It is through this knowledge

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Samuel R. Neel, "Health and Personal Adjustment," General Education: A University Program in Action, eds. W. Hugh Stickler, James Paul Stoakes and Louis Shores (Dubuque: Wm. C. Brown Co., 1950), pp. 106-111.

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Henry Boron et al., "The Personal Adjustment Area," General Education in Transition—A Look Ahead, ed. H. T. Morse (Minneapolis: The University of Minnesota Press, 1951), p. 205.

of self that much of our personality development comes. One of the goals of the Florida group is "to strive for self realization consistent with social fulfillment."<sup>31</sup> Other writers also give personality development a major place among aims, but only a few of the interviewees, all of whom were in the administrative phase of the program, mentioned this aspect. The essence of their stated goals was to help the student to develop the potentialities of his personality.

The psychologist often attributes many personality problems to poor family and home relationships. Awareness of this may account for this phase of personal development being included in stated aims. MacLean has one of the more complete statements on this. He says, "The assumption is that a healthy and maturing individual can be taught to carry on healthy and maturing relationships with family and friends, and that such individuals, so taught, make more competent workers . . . and better citizens."<sup>32</sup>

Writings concerning general education abound with the discussion of the value of family life and the improvement of home relationships as a goal. One of the objectives of the President's Commission is "to acquire the knowledge and attitudes basic to satisfactory family life."<sup>33</sup>

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<sup>31</sup>W. Hugh Stickler and James Paul Stoakes, "General Education: Answer to a Challenge," General Education: A University Program in Action, eds. W. Hugh Stickler, James Paul Stoakes, and Louis Shores (Dubuque: Wm. C. Brown Co., 1950), p. 69.

<sup>32</sup>MacLean, op. cit., p. 38.

<sup>33</sup>Earl J. McGrath, "General Education and the Report of the President's Commission on Higher Education," General Education: A University Program in Action, eds. W. Hugh Stickler, James Paul Stoakes, and Louis Shores (Dubuque: Wm. C. Brown Co., 1950), p. 38.

None of the objectives listed in the catalog of the participating schools related directly to improved family and home adjustments, and only two respondents had anything to contribute on this point. One would teach the student how to establish a home, and the other seeks to establish successful home participation.

Enrichment of leisure time activities. The wise use of leisure time is becoming an increasing problem and opportunity in this country. General education is in a position to do a great deal about this. Behind each statement relative to broad knowledge and skills probably lies the awareness of the functional aspects of these with respect to use of leisure time. The discussion on this could be quite lengthy, pointing out that this aim of general education represents either a "blind spot" in the deliberations of various groups or a door at which they arrive but do not enter. One can, by inference, point to aims both in published materials and from interviewees which relate to the use of leisure time, but the only direct statement found was given by an interviewee who said, "We need to teach the individual how to live on his day off."

### Conclusion

Those interviewed and the references of authors utilized in making the study approach the goals of general education from several different directions. Some expressed their objectives in terms of knowledge desired or of subject matter to be covered. Another way of beginning is to build the aims around people, their activities, and the responsibilities which they will normally encounter. A different but related approach to stated aims is through expected outcomes. This may be in terms of the student

as general education seeks to gain for him the mastery of subject matter, or development of the kind of citizen desired. Other groups built their aims of general education on the method of instruction. General education, by its nature, demands that all of these be considered in establishing goals. Most of those interviewed have expressed their aims in such a manner as to bring in more than one of these approaches.

Taken quantitatively the statements of objectives coming from the college presidents and deans were about double those of the teachers, although there were nearly three times as many teachers. The quality and strength of the aims given by the administrative group were also superior to those of the teachers. This is a reflection of the greater amount of time which the presidents and deans have given to the study of the program as a whole and of their more frequent privilege of attending conferences at which the problems of general education are discussed.

More variation was found in answers of those classed as departmental chairmen than in those of the other groups questioned. Taken as a group, they advanced weaker objectives and leaned more toward attitudes which do not strongly support the program. From these came such statements as "I am just not a general education fan"; or, "General education is for those who show no degree of intelligence." Some of these persons had no teaching duties in general science. Having no direct contact with the work, there was no pressing need for acquainting themselves with the philosophy and aims of the program. By contrast, two of the people who showed greatest knowledge of the program and had the most clear-cut statement of objectives were of the group classed as chairmen.

There were negative attitudes and obscure statements of goals on



the part of some teachers; but, as observed elsewhere, those who knew most concerning the program were, in general, its strongest supporters.

As will be seen in the next chapter, clear philosophical premises upon which to build objectives have not been established by most teachers. The objectives, while many of them are sound and good, reflect to some extent the lack of guiding beliefs.

## CHAPTER V

### THE PHILOSOPHY OF GENERAL EDUCATION

Philosophy has come to mean different things to different people. Some may consider it a method of thinking, of reflecting on weighty matters. Others may define it as queries on such abstract things as truth, beauty, justice, or God. Many consider theories of the great philosophers in history as true philosophy. In its broader sense, however, philosophy can mean the attitudes, beliefs, and convictions of an individual toward any part of life or the universe. As Horne terms it, "Philosophy is the mind of man wrestling with the universe."<sup>1</sup> It is this latter concept as it relates directly to general education that is of concern here.

#### The Need for a Philosophy

Every person, whether he recognizes it or not, has a philosophy. It may have evolved through family beliefs or social contacts, with no conscious effort involved. On the other hand, maturity may bring forth well-thought-out, critical, and reasonable beliefs that serve as guides through life. It is from these basic ideals, from philosophy, that directed action springs.

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<sup>1</sup>Herman H. Horne, "An Idealistic Philosophy of Education," The Forty-first Yearbook of the National Society for the Study of Education, Part I: Philosophies of Education, ed. Nelson B. Henry (Bloomington: Public School Publishing Company, 1942), p. 139.

With the foregoing concept in mind, can there be any questioning the fact that general education will require a different philosophy from that of the older, liberal education from which it has emerged? The shift in emphasis from subject matter to the student is immediately apparent. As French expressed it, "In general education we bend the subject matter to the needs of the student; in departmental courses we bend the students to the needs of subject matter."<sup>2</sup>

No one is likely to attempt to establish a rigid pattern of just what a teacher's philosophy of general education must be. "However, everyone who assumes responsibility for general education is under obligation to decide what qualities he should seek just as he is under obligation to determine what specific things he should teach or the subject matter that he expects to use."<sup>3</sup> Unless these decisions are resolved in the teacher's mind, the journey of learning on which he takes his students will be little better than it would be should he attempt to select subject matter at random.

Philosophy evolves; it emerges. A fixed philosophy, either for an individual or a movement, comes with maturity. Because general education is a relatively new movement, must it not also be apparent that the guiding principles upon which it is founded are still in a state of flux? However, if general education is to unite the disparate ends of liberal education, standards must be established on which educators may select the materials of the curriculum, establish the criteria for values, decide

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<sup>2</sup>Sidney J. French (ed.), Accent on Teaching—Experiments in General Education (New York: Harper and Brothers, 1954), p. 15.

<sup>3</sup>John P. Wynne, General Education in Theory and Practice (New York: Bookman Associates, 1952), p. 97.

what forms of knowledge are worthwhile, and understand what basic ideas should develop as a result of the program of general education. Certainly no one school of thought will be adequate to these ends, but there must be a drawing from and utilization of guiding principles coming from different philosophies.

Question three of the interview form was, "Going farther than definitions, will you attempt to give a brief statement concerning your philosophy of general education?" It should be noted that the question did not necessarily call for a statement of philosophical theory, but rather one concerning the respondent's personal philosophy. Even with this permissive type of question, when the term "philosophy" was broached, there was hesitancy on the part of many. In some cases mild prompting, such as suggesting that the statement of definition and objectives might reveal something of their philosophy, was all that was needed to overcome the reluctance to discuss this essential part of the program.

The first reaction to the replies might well be that men and women as learned as those interviewed have managed to come a long way without any guiding principles. A quick reconsideration and analysis will indicate the unjustness of such supposition. The hesitance was more often due to a conflict between the concept of the more complex philosophical theories and philosophy of education as a guide and directive for action. As stated in the previous paragraph, the philosophy of general education has not matured. Many are still encumbered by old ideas and are in the process of emerging to view with understanding some new thoughts concerning general education. This was especially true with those whose major work had been in the pure sciences.

Basic Philosophical Theories and General Education

The philosophies which are most often associated with general education vary greatly among the different programs and the leading people behind them. Taylor<sup>4</sup> attempts to identify the philosophical principles underlying the programs of general education. They are, according to him, the philosophy of rationalism, neo-humanism or eclecticism, and the philosophy of naturalism, or, more specifically, instrumentalism. In preparing an abstract of philosophies which are most often considered by the proponents of general education, the philosophies of idealism, pragmatism, rationalism, realism, and humanism are discussed. Scholasticism, although it represents the fundamental philosophy behind some schools which have extensively publicized their general education programs, is not included in this discussion because all of the institutions are State owned. They are, therefore, not directly influenced by this philosophy. The analysis of the interviewees' responses will be in comparison with these.

There is some variation among writers as to which philosophy underlies certain programs. For example, Taylor, in the paragraph just cited, says that the St. John's program, as advocated by Hutchins, is basically rationalistic. Other writers place this program either to the left or right of this position. This is indicative of the tendency of advocates of various philosophies to make some transition or compromise. The steps by which this takes place are so indeterminate that it is often difficult, if not impossible, to ascribe any given philosophy to the program. The

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<sup>4</sup>Harold Taylor, "The Philosophical Foundations of General Education," The Fifty-first Yearbook of the National Society for the Study of Education, Part I: General Education, ed. Nelson B. Henry (Chicago: The University of Chicago Press, 1952), p. 26.

problem of semantics is also present as evidenced in the use of "eclecticism" for "neo-humanism"—a usage which is not common in philosophical writings. The discussion which follows will highlight the basic points of some of the philosophical theories which are the most common to different movements toward general education, and point to a philosophy for the program itself. As noted earlier, this will require a different philosophy. It will be eclectic in the true sense of the word, drawing from the various philosophies as needed in order to attain the foundation for establishing goals.

### Idealism

There are two common concepts of idealism which are not a part of the philosophy which bears this name. The first relates to the high moral and ethical standards of the individual. The second considers the person who plans a better way of doing for a better tomorrow to be an idealist. Only as these are products of the minds of men do they have any connection with idealistic philosophy. Hocking points out that the philosophy is more nearly one of ideas than of ideals. This he calls "idealism."<sup>5</sup> This conception of the idealist as a visionary is not entirely unwarranted and does influence the application of the philosophy to education.

Though idealism as a term is of relatively recent origin, the idea goes back to Plato. In one or more of its various forms it appears as an influence in many schools of philosophy, especially as it concerns the development of the good qualities of man. The many forms which idealism

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<sup>5</sup> William E. Hocking, Types of Philosophy (1st ed. rev.; New York: Charles Scribner and Sons, 1938), p. 248.

has assumed under different leaders makes it impossible to discuss the entire philosophy. However, there are some common concepts. Idealism stresses mind and relegates matter to the position of a by-product. Basic reality is of the mind, thought, or the inner self. Butler says of idealism:

The common attitude on which idealism builds is the rather unconscious disposition most of us feel that in some way we ourselves are real existent beings, not transitory illusions, not dreams, nor fancies. . . . Although it may not be this particular phrasing of it for most idealists, it is this motif common in human life which is refined and brought into full bloom intellectually by idealism. . . .<sup>6</sup>

He adds that, by and large, idealists hold that mind or spirit, as each man experiences it in himself, is fundamentally real and that the totality of the universe is somehow mind or spirit in its essence."<sup>7</sup>

Bearing this out is Horne, who says:

Idealism is the conclusion that the universe is an expression of intelligence and will, that the enduring substance of the world is of the nature of mind, that the material is explained by the mental. Idealism as a philosophy stands in contrast with all those systems of thought that center in nature (naturalism) or in man (humanism).<sup>8</sup>

Idealism applied to education considers the student as an individual who is in the process of developing his mental capacities. Butler further adds that idealist-inspired education "is not wholly child-centered, subject-matter-centered, nor society-centered; it is ideal-centered."<sup>9</sup> Though this concept is readily recognized as one of the strongholds of the old formalized education, as it applies to the development of understanding between individuals through common knowledge, it

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<sup>6</sup>J. Donald Butler, Four Philosophies and Their Practice in Education and Religion (New York: Harper and Brothers, 1951), p. 163.

<sup>7</sup>Ibid.

<sup>8</sup>Horne, op. cit., p. 139.

<sup>9</sup>Butler, op. cit., p. 224.

has come to play a part in the philosophy of general education.

Obviously it is a dangerous undertaking to attempt to bend one man's philosophy of life to fit the label attached to the beliefs of another; however, many of the interviewees answered the question concerning the philosophy of general education with various phrasings of the common core of knowledge held desirable by the idealist. One teacher termed it a "common background," another believed general education should give all students a "similar experience." Going a bit further, another said the philosophy behind general education is "to make it possible for everyone to have the same fundamental knowledge so they can work together and live in harmony."

A view of idealism that is even more inclusive of the philosophy of general education is given by Horne when he looks to the desired results in the individual. He states:

. . .the really important thing is that the subject studied should contribute to the growth of the personal spirit of the student . . . mainly he should develop his personality—his real self—in a universe that is personal. He takes an interest, he sets himself to learn, he is self-active, he wins his sense of adjustment to his world, he feels himself growing, he appreciates the great possibilities of the ages, he learns to respect others as himself, and he feels at home in his world.<sup>10</sup>

An Oklahoma interviewee who included many of these principles in his philosophy said, "General education should contribute to the dignity of man and his responsibilities and participation in his role in society." Leaning closer to the spiritual concept of the idealist, another Oklahoma teacher said, "The student must have something to stand on so he can find himself." Another said general education is "the first step toward

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<sup>10</sup>Horne, op. cit., p. 164.



intellectual and spiritual freedom" on the part of the student. Real growth and learning take place when the student assumes the initiative.

The idealist gives an important place to the teacher. In a very real sense he is the ideal model for the student. It is his job to create the educational environment and inspire the student to high attainment.

In terms of curriculum the idealist and many of our teachers of general science agree rather closely. The idealist insists on a body of facts which will challenge the mental capacity of the student, but they also go beyond the books, especially in the use of experimental evidence.

Idealism, to the extent to which it subscribes to the theory of coherence, fills the need of the general educationalist in science. This theory, that a judgment is true if it is consistent with other judgments or has by experience been found to be true, is important to analysis, critical thinking, and scientific method.

#### Pragmatism, Instrumentalism, and Experimentalism

Pragmatism as a philosophy is one by which modern Americans to a very great extent live, even though they imagine they are committed to another system of thought. We are, or attempt to be, "practical" people. The utilitarian test is a subconscious criterion. "What good is it?" "How can you use it?", "What does it get us?" These and kindred questions voice this search for a functional guide.

Even with respect to truth, the test is of utility, workability, or that which leads to a satisfactory consequence. There is no such thing as an absolute truth; it is emergent. There are different ways by which this truth is established. If the thing satisfies the desires and

aspirations of man, it is true. Most scientists are at least partially pragmatic because their theory holds that, if experimental verification is possible, truth has been established. The position taken by James is that "pragmatism is an attitude"<sup>11</sup> which looks to results and facts rather than to first principles and categories.

If we look at pragmatism from the writings of James, excluding the older concepts out of which it grew, many of the Oklahoma interviewees' stated philosophies of general education closely resemble this view. A teacher stated, "I believe all materials put into general education should be of some practical value." He would relegate cultural aspects to a minor position. Mentioning practical learning, another said, "General education should enable the student to handle better his everyday living."

Other facets closely akin to pragmatism mentioned by the interviewees are: "the ability to converse with anyone," "the training and subject matter of most general use to all," "the knowledge to live life to the fullest and to realize life's ambitions," and "the background to make life more enjoyable."

The term instrumentalism has been given to Dewey's philosophy as it grew out of pragmatism. Although for many years this philosophy has greatly influenced American elementary education, colleges have tended to remain under the influence of the European pattern of educational thought. It is only with the advent of general education that instrumentalism has come to the fore in higher education. A writer bears this out when he

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<sup>11</sup>William James, Pragmatism (New York: Longmans, Green and Co., Inc., 1907), p. 54.

says, "General education today is developing as an instrumentalist program."<sup>12</sup>

To the instrumentalist, truth is temporal. The emphasis shifts from the absolute to one of change based on experience, inquiry, and scientific methods. John Dewey is generally credited with the beginning of the movement known as "Progressive Education." Learning is by doing, with emphasis on the projects and activities of the individual. Discussing Dewey's contribution to educational philosophy, Brubacher says:

Knowledge, he [Dewey] claimed, is the outcome of action. Confronted with a problem, an adult or child constructs in imagination a theory or hypothesis of how it might be solved. The truth or falsity of the proposed solution develops from whether or not the consequences of acting on the hypothesis corroborate it.<sup>13</sup>

None of the Oklahoma educators mentioned Dewey or his philosophy in connection with general education. However, according to the interpretation just quoted by Brubacher, many would agree. One teacher said, "We must have more respect for the scientific method. Our whole life, the social, the economic, and all other aspects are affected by critical thinking." Another said, simply, "The process of scientific thinking is the most important thing in general education." Two others called it the "critical application" of knowledge.

In a revolt against the over-used labels of pragmatism and instrumentalism, some writers prefer to use the term experimentalism. Geiger takes this stand. In his discussion of knowledge he says, "An experi-

<sup>12</sup>French, op. cit., p. 19.

<sup>13</sup>John S. Brubacher, "The Challenge to Philosophize about Education," The Fifty-fourth Yearbook of the National Society for the Study of Education, Part I: Modern Philosophies and Education, ed. Nelson B. Henry (Chicago: The University of Chicago Press, 1955), p. 12.

mentalist interpretation of knowledge is instead a description of the way problems are actually solved, above all by scientific method. . . ."<sup>14</sup> If we accept this explanation as it applies to education, there need be no further discussion in this study as to other points of difference.

### Rationalism

Rationalism is greatly concerned with epistemology. This is especially true as it deals with the education of man, for rationalism holds that reason is the most important instrument of knowledge and that we know only those things which we have reasoned out.

Rationalism has evolved to the point that a difference is discernible between the older concepts and the new. The earlier rationalists believed certainty to be attainable through mental processes only and that absolute values do exist. Bigelow in writing of those that follow this viewpoint, says, "The rationalists believe that certainty is attainable; that absolute values do exist; that cultivation of reason is the sole function of general education. . . ."<sup>15</sup>

Those building their curriculum around this philosophy contend that, if the development of reason is successful, it follows that correct behaviour will be a natural result. This is not to say that educational results will be uniform. Those who hold this concept also recognize the variability of students which controls the amount to which they, by ra-

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<sup>14</sup>George R. Geiger, "An Experimentalist Approach to Education," ibid., p. 140.

<sup>15</sup>Karl W. Bigelow, "The Preparation of College Teachers in General Education," The Fifty-first Yearbook of the National Society for the Study of Education, Part I: General Education, ed. Nelson B. Henry (Chicago: The University of Chicago Press, 1952), p. 303.

tional processes, will transfer their knowledge from one situation to another.

There are certain basic principles of the world which one recognizes through deductive reasoning as true. Of these basic principles, Patrick says, ". . . there are certain basic principles of the world which are recognized as true by reason of man and from these we can acquire a rigorous deductive knowledge of the world."<sup>16</sup> To contrast the new rationalism with the earlier concepts, Patrick also says, "The new Rationalism emphasizes not merely the objective reality of logical relations, but also the importance of constructive and creative power of the mind in acquisition of knowledge."<sup>17</sup>

For many the distinction between rationalism as it first developed and that form of rationalism which has evolved today is in the acceptance or rejection of sense perception. The modern rationalist has not rejected the idea that "the highest kind of knowledge consists in the universally valid judgments that are consistent with one another."<sup>18</sup> He does say that the sensations or experiences must be interpreted by the mind and organized into a system which has meaning before they can become a part of our body of knowledge. The rationalist, then, will stress laws, concepts, and principles as a foundation on which new knowledge may come by reason rather than by observation, experimentation, and sensation.

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<sup>16</sup>George Thomas Patrick, Introduction to Philosophy (revised edition; New York: Houghton-Mifflin Company, 1935), p. 333.

<sup>17</sup>Ibid., p. 342.

<sup>18</sup>Harold H. Titus, Living Issues in Philosophy (2nd ed. revised; New York: American Book Company, 1953), p. 195.

Here, again, it may seem that the answers of the interviewees are bent to fit the views of a philosophical theory. To a greater degree than found in the discussion of other philosophical principles, this may be true in relation to rationalism. However, many of those who stressed a good background or development of a well-rounded individual began in the direction a rationalist would take, only falling short of a philosophy because they failed to add a reason for this development.

A college president said, "General education should provide all students with a basic understanding of our way of life." "A good general knowledge" was given by three teachers as their answer on philosophy. "To give students a good view of the whole field," "to educate the whole man," "to turn out well-rounded students," and "to engender a broad basic concept" are other expressions used by those interviewed. From these answers it is obvious that the interviewees failed to change their statements from the objectives of general education to a philosophy. If one assumes the liberty of taking that final step for them, however, many of these seemed to wish to cultivate that ability to reason that Bigelow has called "the sole function of general education."

One teacher referred to education as it leads the student "to develop a philosophy of his own through rational methods." This last statement probably comes nearer the standards of the philosophy of rationalism than any other.

### Realism

Realism as a philosophical theory has been widely accepted throughout history in spite of its complex manifestations. As it concerns

us in the twentieth century, it is a part of the pendulum's swing away from the emphasis on man and mind which became strong in the previous century. The one persistent concept that is common to all realists, however, is that the external world exists quite independent of man's mind to perceive it. According to Breed, the philosophy of realism can be determined by answering two questions:

Does one attribute to intellectual activity an impression or prehension of the preexistent? If so, he is a realist. Does one attribute to this activity the creation of the existent? If so, he is not a realist.<sup>19</sup>

The realist places more importance on pure theory or knowledge as an end result than do many of the other philosophers. He further claims a closer relationship with science by attempting to furnish objectivity and facts that will lead to an interpretation of life and the universe. By being objective he hopes to force the unpredictable qualities of man's personality to the background as he searches for truth in external relations. In the words of Wild realism, as it relates to the aims of education, is fourfold in that it seeks:

. . .to discern the truth about things as they really are and to extend and integrate such truth as is known; to gain such practical knowledge of life in general and of professional functions in particular as can be theoretically grounded and justified; and, finally, to transmit this in a coherent and convincing way both to young and old throughout the human community.<sup>20</sup>

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<sup>19</sup>Fredrick S. Breed, "Education and the Realistic Outlook," The Forty-first Yearbook of the National Society for the Study of Education, Part I: Philosophies of Education, ed. Nelson B. Henry (Bloomington: Public School Publishing Company, 1942), p. 94.

<sup>20</sup>John Wild, "Education and Human Society: A Realistic View," The Fifty-fourth Yearbook of the National Society for the Study of Education, Part I: Modern Philosophies and Education, ed. Nelson B. Henry (Chicago: The University of Chicago Press, 1955), p. 31.

Throughout the study of the philosophy of general education as it was conceived by the educators in the Oklahoma colleges, we have met with repetition of the stated objectives in the philosophy. However, in attempting to discover the extent of realism among these people, the task would be simpler if more of these objectives were repeated. It will be remembered that most of the interviewees began their stated objectives with a reference to the acquisition of knowledge, then specified what was to be done with this information. Though this typically scientific view that would seek truth from the objective study of external relations appeared many times in discussion with the Oklahoma educators, it was found only in partial statements in their philosophy of general education. One said, "All students should have an opportunity to explore some new areas." Another would invoke a "broader basic concept of knowledge," while a third looked to "general knowledge." A fourth that might apply to several theories of philosophy yet relate also to realism was the statement, "General education should develop an analytical approach to knowledge."

#### Humanism

Humanism, like all other systems of philosophy, is a "many splended thing." In every case, however, emphasis has been placed on human interests. The view of education that stresses the transmission of the cultural heritage of human experience from one generation to the next is sometimes called "neo-humanism." "Scientific humanism" is a term applied to the belief in man's control over his destiny by the institutions of government and social affairs. Pooley in writing of the philosophies of general education says:

Humanism as an educational philosophy means the continuous trans-



mission from generation to generation of what man has learned and discovered in his business of surviving, of adapting himself to his surroundings, and in striving to change these surroundings in the light of what at the moment he considers better.<sup>21</sup>

This simplified interpretation of humanism was echoed by many of those interviewed in the Oklahoma colleges. A teacher would "pass on the general cultural contributions that the past has to make to the present generation as it prepares for the future." Another included an "appreciation of the literature, music, and other cultural subjects" as a part of his philosophy. Presumably he meant the study of the past as well as the present. A president would engender "perception of the past and faith in the future."

Two other teachers specified cultural development as an important part of general education. Another went further, saying, "Everyone should have certain appreciations of his past background and historical heritage in order to have the best life possible." A dean said much the same thing, yet qualified his answer. He stated, "Students need knowledge of the past and how it can be used to guide their future; however, I wouldn't go so far as Hutchins and his 100 great books!"

If it seems that more of the interviewees met the standards of humanism than any other theory of philosophy, it should be pointed out again that the statements of Pooley have been used rather than the many more complicated explanations. It is entirely possible that because Pooley is himself an educator he might speak in terms more nearly like those of the interviewees than would a "pure" philosopher.

#### Adverse Opinions

There was very little outright antagonism to general education

indicated by responses to the question concerning philosophy. Nearly everyone saw value in it. Three did express antagonism to the program. One had no philosophy of the program because of this, another expressed himself as just antagonistic, and the third felt that everything taught should have some practical value. It was implied that no such value exists in general education. A statement which at best was not a compliment to the program was that it is for students of little ability.

Unfortunately there was more of this attitude among science teachers than was indicated by direct replies to this question. This was brought out in noting the many ways that a student may avoid taking general education science, those courses in science which have been developed to meet the needs of general education, and in other statements concerning advisement of students. Some discouraged the student's taking the courses set up for general education. Drawing from information which will be developed fully in Chapter VIII, it may be observed that it was a departmental head who stated that only those subjects of practical value should be taught, and a chairman who said, "If you mean by general education those beginning subjects in the different areas, then I am for it." This attitude is a point of some concern, because it came from three who were in positions of some leadership and influence. Though the chairmen were not teachers of general education subjects, it would appear that, since it is a part of the program of the school, they should have been leading in its development. On the positive side of this picture there were a number who had not yet established their principles of general education, yet had open minds and were trying to learn all they could of the movement.

### The Total View

Reference has been made to the apparent immaturity of the philosophy, of the interviewees' inability to formulate on the spur of the moment a concise statement or opinion; yet, when the statements are evaluated en masse, it becomes apparent that the material for the formulation of the philosophy is present. Were these people able to study the problem as a group or through selected representatives, they could write a set of philosophical principles which would command respect and hasten the growth of the general education movement throughout the state.

### Institutional Philosophies

Asked of all persons interviewed was, "Has your school or any department therein established and put into record a philosophy of general education other than that indicated in the catalog of the school?" Complementary to this question was the one which asked, "What is this philosophy, or where may a copy be obtained?" These were questions four and five.

The answers to these questions were almost wholly in the negative, yet in five of the six schools, one or more teachers were aware of an effort toward the establishment of a philosophy of general education. This difference in response was almost directly related to teacher participation on faculty study groups which had the program of general education as a major concern. As might have been expected, deans and presidents were more generally aware of individual and group efforts toward the study and establishment of a philosophy which would guide in development of the program than were teachers. This is not to say that teachers were less

aware of the need for guiding principles, but they were not in position to know as much as the administrators about what other teachers and other groups were doing.

One of the colleges, through a study committee, had written a report covering general education. Philosophy and guiding principles were included as a part of this report, the whole having been approved and adopted by the faculty. For their philosophy they had borrowed from the definition of general education in the report of the Harvard Committee relative to the education of the student as a "responsible human being and citizen,"<sup>22</sup> and further, from the report of the President's Commission on Higher Education, which says, "Colleges must find the right relationship between specialized training on the one hand, aiming at a thousand different careers, and the transmission of a common cultural heritage toward a common citizenship on the other."<sup>23</sup>

Committee reports were received from two other colleges. One of these had a fairly lengthy discussion of current philosophies, which led to no specific local opinion. The third of these reports also accepted the definition given by the Harvard Committee and followed it with five notes preliminary to their stated objectives. These points seemed to represent the combined philosophy of the group, and one or more of them were referred to by the interviewees of this institution when asked con-

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<sup>22</sup>Harvard Committee, General Education in a Free Society: Report of the Harvard Committee (Cambridge: Harvard University Press, 1945), p. 49.

<sup>23</sup>President's Commission on Higher Education, Higher Education for American Democracy, Vol. I: Establishing the Goals (New York: Harper and Brothers, 1948), p. 49.

cerning their philosophy of general education. In their five notes an attempt was made to make concession to all prevailing philosophical trends as advocated by the supporters of various general education programs.

A probable reason for this non-selectiveness came from the response of one who said, "After a study of about twenty programs of general education throughout the United States, we adopted the general philosophy which is given in our progress report of 1949." This school had a new committee charged with the restudy of the program.

All other institutions had had active for one or more years a faculty study group concerned with general education, but copies of reports from these were not available. A number of interviewees referred to the catalog of their school rather than stating a philosophy of their own. Almost without exception the philosophy was obtainable from the catalogs only by interpretation of stated definitions and objectives.

### Stability of the Philosophy

The last questions directly related to philosophy concerned change or contemplated change within the school. In this connection the sixth question was, "Is this [philosophy of the school] considered a fixed guide, or is it emergent and conditioned by the practical aspects of establishing a curriculum?" The seventh question was, "If such a change in stated philosophy developed, how did it come about?"

The answers to the question concerning whether or not the established philosophy was fixed or emergent, if considered in the light of the number of responses, were not conclusive, over half declining to answer or having no answer. On the other hand, those who did reply to this question

were largely from the administrative group and appeared to be adequately informed. The answers fell into three classifications; namely, the schools have (1) a fixed philosophy, (2) a fixed basic philosophy, or (3) an emergent, or flexible, philosophy.

A dean said, "Our philosophy of general education is flexible. A realization has developed among the faculty members that our general education program ought to be reviewed in accordance with recent experience of the faculty and to more nearly conform with the concept of general education as it is emerging in the literature of the area." Two other deans referred to their study groups. One spoke of a continuing committee which gives attention to this problem and presents suggestions for modifications. The other said theirs was a more or less fixed guide, but that an institutional studies committee did keep the matter under advisement. A president said their philosophy was subject to change with approval of the faculty. Nothing is to be gained by giving all of the statements, so the responses are grouped under the classifications noted. Eleven classed it as a changing, emerging, developing, progressive or evolutionary philosophy, while five saw their philosophy as more or less fixed with respect to basic concepts but subject to modifications. Four considered the philosophy of the program at their school to be fixed, or as one said, "primarily fixed since there is no design for continuous change or evaluation."

#### Change in Stated Philosophy

A point which has not been made and which probably indicates where some additional study might be profitable is the frequent reference to the catalog of the school by all groups interviewed. In response to

the question on whether or not a change in stated philosophy was anticipated and others of this group on philosophy, the statements that a new catalog would soon be published were made. One person avoided answers to the first seven questions with the statement, "Let the dean answer that." If we knew with certainty who writes the definitions, objectives, and philosophy for the various catalogs, we might have more information concerning the origin of change in stated philosophy and objectives, and whether or not they are, as implied, handed down from one source. Information concerning study groups seemed to refute this.

Only twelve responded to this question in such a manner as to add to the responses given previously. A dean reported that there were divergent philosophies and purposes among the faculty and staff members which led to a faculty-initiated study group which, in turn, carried its report to the faculty. A departmental chairman from another school stated, "We found the philosophy confused." He noted that even the experts cannot measure objectives unless there is a philosophy on which to establish evaluative instruments.

Eight of the twelve responding to this question concerning change in philosophy referred to the work of voluntary or appointed faculty study groups. Two of these study groups were continuing committees capable of planning and analyzing through the years. A teacher referred to one of the practical aspects which had forced a great change upon the program. It was that of increased enrollment without proportionate increase in staff and facilities. The basic philosophy may not have changed, but methods of instruction not compatible with that philosophy were forced upon the teachers because of heavy enrollment.

### Conclusion

The philosophy of general education at the Oklahoma State Colleges is in a developmental stage, evolving as experience shows the way. Lack of maturity was evident and to some degree was to be expected. A program such as this cannot develop overnight, nor is it possible to take the program of another institution or group and make it fit local conditions.

In spite of the frequent references to faculty study groups, a need is seen for more staff study within the school. Not enough teachers are familiar with the program, and few have formulated a clear statement of philosophy. In some cases the general education study groups included members who were not teachers in the general education program. Too many of the general education staff had never served on such a committee. It is suggested in this connection that a state-wide study would also be profitable.

A few of those interviewed had carefully thought through the program and arrived at basic beliefs to guide them. Two examples are:

General education, as I see it, should be cultural education. It should consist of facts, principles, understandings, and appreciations which a person will need to use, and be able to use, as various problems come up. Further, it should leave the student with a philosophy of his own, and a natural tendency to use rational methods. It should add to the maturity of the student.

The educated man should be able to live a life full of appreciation for the world into which he has come, to meet with intelligent, critical analysis the everyday routine and events of life involved, and to conduct himself in a praiseworthy manner in normal times or in times of crisis. General education is the principal device for leading each man toward this goal.

Another very brief statement which, upon analysis, leads to extensive thought is, "We believe that general education is a step toward intellectual and spiritual freedom."



A comparison of the responses and attitude of the presidents of the institutions, compared with those of the teachers, is revealing, in that the attitudes of the teachers seemed to be greatly influenced by those of the presidents. There were fewer concrete answers from a school in which the president exhibited something less than enthusiasm. However, the president and the dean, regardless of their enthusiasm, cannot organize a successful program without the staff's working in cooperation.

Even as a person matures in philosophy, just so must the program mature; and, although it cannot be said that any one school at the time of the study was united behind certain beliefs, they had all come a long way in this direction. The general theme of the analysis is that, considered in terms of individuals, the philosophy behind the general education movement at the Oklahoma State Colleges left much to be desired, but a few have established sound guides.

Given a nucleus of people in each college who believe in the program of general education and who have come to a sound philosophy, their influence should grow. This impetus for growth appears the brightest prospect for the movement in the Oklahoma State Colleges if more effective means of acceleration and strengthening are devised.

This growth has been too slow for a program which is moving as rapidly as that of general education. The teachers of general education science must have a strong personal philosophy which is at least compatible with that of general education. This philosophy must come from the teacher's own study and efforts to understand the program. A review of the stated philosophy and objectives as they appear in the institutional catalog is not enough. Those who have no basic philosophy of general education

and are not willing to develop in this respect constitute the greatest single threat to the program.

## CHAPTER VI

### THE ROLE AND MAJOR OBJECTIVES OF SCIENCE IN GENERAL EDUCATION

#### Science in our Modern World

The student of education is aware that our American educational program is in a period of change, or transition, bringing with it uncertainty and concern. Is the education which we are giving our young people the best for our time? Where does the greatest emphasis lie? We are confident that the rapid growth and development of science and technology have had, and are having, a great influence in the determination of the kind of schooling needed for modern man in contemporary society; however, we cannot stop with the present. We must endeavor to educate for life in a changing world, a world of changes which we cannot clearly foresee.

Science has developed farther and has revealed more in the twentieth century than it did during all of recorded history to that time. What place does this give to science? It has attained a position of power, appearing infallible to some people. It may even be that there are those who have given it a godlike place. There are others who fear science; on the other hand, to many it is but an unfathomable mystery not to be approached by the ordinary man or the uninitiated. However, most scientists desire that the layman shall recognize science as a friend and benefactor of mankind in order that their work may be carried on without being handi-

capped by the vast display of ignorance and prejudice which has often greeted them in the past.

No person in our social and economic order can escape the effects and influences of science and the associated developments with it. Knowledge of science and of the way of science has come to be a responsibility of citizenship, not only for the individual's better regulation of his own life but for his more intelligent participation as a voter for those who represent him in the formation of governmental policy relating to control of scientific development.

Johnson expressed all of this very well and extends the discussion to show some of the impact on education:

In very recent years, as we compare events in time, science has risen to a great power. In fact it has come to be worshipped for its power as much as for its revelations. The direct application of science to society, presumably in the objective interests of mankind and his prosperity, the manifest advances in our control over nature have given to science and technology a position in the sociology of knowledge that on the surface, at least, would seem to challenge disturbingly the ancient virtues of the humanities.<sup>1</sup>

#### Science as a Part of General Education

The marked changes that have occurred in the science classes for non-science students in American colleges during about three decades came about as a result of dissatisfaction with study which required memorizing details and learning the techniques needed by science majors. Many attempts were made in the transition, including "novel methods of presenting lectures and conducting laboratories, survey courses covering several sciences, watered-down versions of the orthodox science courses, and, a little

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<sup>1</sup>Charles S. Johnson, "Knowledge and Human Responsibility," The Educational Forum, XX (May, 1956), 389.

later, courses which selected a few blocks of subject matter for rigorous treatment."<sup>2</sup>

In view of the upsurge of general education programs in the colleges of today and the increasing emphasis on science and technology as a part of the everyday life of ordinary Americans, is it surprising to find that some form of science is being taught in nearly every general education program in the country?

Question fourteen of the series of questions asked of the interviewees consists of three closely related queries concerning the role of science in general education. It asks, "What do you see the role of science in general education to be?" "Is it more important than other subject matter areas?" "Because of our technological age, does it have greater significance than other branches of learning?" Question fifteen asks, "What do you consider the most significant objective of general science education?" The presidents were not asked to respond to these. Because these questions represent different approaches toward the same general idea, the discussion will cover all of these points as developed from the writers of textbooks, the teachers' answers, and the literature in the field, culminating with an analysis of the one objective considered most important by the Oklahoma respondents.

The logical approach to a study of this magnitude would begin with a broad view of the role of science in the general education program, followed by the aims and objectives by which this role should be filled. However, because in the minds of many of the teachers and writers role and

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<sup>2</sup>Konrad B. Krauskopf, "Science in General Education at Mid-Century," Journal of Higher Education, XXII (February, 1951), 59.

objectives have become synonymous, it is often impossible to separate the two. Some will begin with a statement directed toward the role, ending with the objectives. Others will reverse the procedure. In fact, one of the most enlightening aspects of this part of the study is the fact that so many attempted to explain where they are going by describing the means by which they will get there.

It should also be pointed out here that much of the philosophy of the entire general education program will pertain to the role of science. The purpose of this section becomes, then, an attempt to define the relationship of the general sciences to the whole movement.

#### The Role of Science as Defined by Textbook Authors

Because textbooks continue to play an important part in science as it is presented to the student of general education, we should begin with an analytical study of the role and objectives of science as indicated by the authors of current texts in the physical and biological sciences. A survey will show that no common agreement exists. The authors range from antipathy to enthusiasm, with some expressing no concept of general education. Others ignore any definition and purpose beyond the facts of science.

One author, aware or not of general education objectives, did not mention them or give any suggestion of his philosophy and objectives. His text was written as a survey course with only an indication of a broader concept in the statement, "The text . . . endeavors to maintain a close liaison between subject matter and everyday experience and knowledge."<sup>3</sup>

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<sup>3</sup>Dwight E. Gray, Man and His Physical Universe (New York: D. Van Nostrand Company, Inc., 1942), p. viii.

A unique view is that of Conant,<sup>4</sup> who recognizes the need for general education but proposes a completely different approach toward the attainment of goals. He would introduce and teach science through close study of a few relatively simple case histories. He feels that it is not necessarily more knowledge about science which is needed, but more understanding of science.

In a college-level biology text by Weisz, the "cosmos is the setting," and the principles and concepts are the "beacons of discussion,"<sup>5</sup> indicating that he is aware of the scope of subject matter involved and the guideposts which lead to a comprehensive, worthwhile discussion. He feels that a book in general biology should be extensive enough in each part to promote an appreciation of the whole, and should reflect something of the "inner dynamism"—the constant change within the cell of living substance. Also, rather than stressing facts as an objective, Weisz would develop an awareness of the possibilities of organization among the components of the subject, of the manifold relationships, in order to approach our end. He says, "For facts substitute relationships and concepts; for memory substitute understanding."<sup>6</sup>

The physical science text written by Jean, Harrah, and others exhibits a wholesome attitude by expressing the role of science as the means for developing scientific knowledge and developing the ever increasing

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<sup>4</sup>James B. Conant, On Understanding Science: An Historical Approach (New Haven: Yale University Press, 1947), pp. 1-18.

<sup>5</sup>Paul B. Weisz, Biology (New York: McGraw-Hill Book Company, Inc., 1954), p. ix.

<sup>6</sup>Ibid., p. xii.

social concepts. In cutting across many sciences, they propose to help the student "locate himself in the universe; that will free him from superstition and prejudices. . . ." <sup>7</sup> The generalization made calls for the developing of an understanding of science in such a way as to influence the beliefs, philosophy, behavior, and attitudes of future citizens of a democracy.

A biology textbook which, according to the authors, has an organizational approach through evolution not used by any other writer, sets up three guideposts that aim to develop scientific methods and critical thinking:

Whenever possible, the genesis of a fact or idea should be given rather than the mere fact or idea alone. The student should be encouraged to peer behind the scenes, to see for himself how facts are obtained, so that he may judge their validity, thus sharpening his own initial sense, and at the same time gain the feeling that he is participating in the genesis of the idea he is studying. <sup>8</sup>

The second guidepost is "the attracting and stimulating of the student while taking a middle course between the too easy popularization and the undue stress on sources of facts." <sup>9</sup> The third and last guidepost probably is deeply rooted in this author's philosophy. He speaks for all biologists in saying, "Biologists unanimously agree that the one unifying principle which underlies the whole field is that of evolution." <sup>10</sup> This principle becomes the theme and the pattern of organization for his text.

By far the best general approach to biology as stated in preface

<sup>7</sup> Frank C. Jean et al., Man and His Physical Universe (Boston: Ginn and Company, 1949), p. iii.

<sup>8</sup> Wolfgang F. Pauli, The World of Life, A General Biology (Boston: Houghton-Mifflin Co., 1949), p. vi.

<sup>9</sup> Ibid.

<sup>10</sup> Ibid., p. vii.



and foreword is that of Gerard. The purpose of science is "to bring to the intelligent layman some appreciation of the nature and status of biology, especially its analytic rather than descriptive aspects."<sup>11</sup> This is to be done so that scientists can "help recruit men in other walks of life to the use of the method and attitude of science in dealing with problems of state and society."<sup>12</sup>

"We have been guided by a desire to furnish adequate foundations for continuing studies and to present the most significant data of that science,"<sup>13</sup> is a typical statement of those whose primary aim is teaching the facts of biology. The same authors continue to show their lack of response to the demands of general education when they say their writing is "influenced by personal tastes and . . . predilections."<sup>14</sup> The culminating blow comes to the general education enthusiast when these same authors say, "Much has been written recently about an emphasis upon man and about teaching biology as one of the humanities. In this book man figures as the chief, but not the only illustrative organism."<sup>15</sup> For their definition of humanities they have taken that of human beings collectively, which is not the proper use when speaking in general education terms.

The last of these authors whom we shall quote also has the approach of the pure scientist when he states the purpose underlying his

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<sup>11</sup>R. W. Gerard, Unresting Cells (New York: Harper and Brothers, 1940), p. xi.

<sup>12</sup>Ibid., p. xii.

<sup>13</sup>Thomas S. Hall and Florence Moog, Life Science (New York: Harper and Brothers, 1940), p. v.

<sup>14</sup>Ibid.

<sup>15</sup>Ibid.

text is "to state simply and clearly the main facts and principles on which a sound and teachable course in biology can be based."<sup>16</sup> This author goes some further than others by placing emphasis on the scientific method as the mode of presentation and stressing logical thinking as a desired outcome of this method.

### Science as It Contributes to Personal Needs

Following a study of the role and objectives of science in general education as set forth by the authors of textbooks, we look to the viewpoint of the teacher who is the direct link between these publications and the student. Again, as we compare statements from the teachers in the Oklahoma State Colleges with the writers in the field, we find not so much disagreement, but differences in the depth of thought given to the matter at hand and in the placing of emphasis. Because their study has no doubt been extensive, the writers give greater breadth and depth to the discussion of science in the general education program than do those interviewed. They are also more specific concerning the goals we should attain. As might be expected, we find some overlapping and much deviation. Emphasizing many of the ideas advanced in the interviews, Krauskopf gives a concise listing of the purposes of the general sciences. These also appear in many of the writings on the subject. For the student who questions the importance of science to his general education, he points out:

. . . throughout his life he will be hearing about new inventions and new theories; that as a voter and taxpayer he will help to decide such currently important questions as whether research should be government supported and whether some kinds of research should be shrouded

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<sup>16</sup>James Watt Mavor, General Biology (4th ed.; New York: The Macmillan Company, 1952), p. vii.

in secrecy; that as a business man or public official he may be called upon to allocate funds for research, to recommend for or against hiring a scientist, or to discuss problems with a scientist; that he will find his thinking in economics, politics, philosophy, and religion subtly but powerfully influenced by science; and that he will hear much about possible applications of the scientific method to economic and social questions. Because science will influence his life in so many diverse ways, he needs to know something of its methods, its goals, its capabilities, and its limitations. In brief he should have an intelligent appreciation of science, much as he needs an appreciation of nature or art or statesmanship."<sup>17</sup>

The teachers interviewed are also aware that science is important to everyone. One made a characteristic statement when he said, "The cultural development of civilization is dominated by science; therefore, everyone should be aware of his scientific environment in order to better appreciate his culture." A dean pointed out that a part of the role of science in general education is to show the importance and the significance of science in modern society. These are typical of the responses which will be correlated with the opinions of professional writers into two broad areas—personal development and training for citizenship.

#### Facts and Vocabulary

Characteristically, the writers rarely mention facts and vocabulary in defining the broader role of science in general education. When they do, it is qualified to mean an understanding or an appreciation rather than specific facts alone. Some go so far as to point out the fallacy of teaching facts in the expectation that they will be transferred to everyday life. One says:

It is not important that the average citizen should be able to name the bones of the inner ear or locate the pineal gland, but it is highly important that he understand the psychological forces which play upon

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<sup>17</sup>Krauskopf, op. cit., p. 62.

and shape human personality, that produce a normal, mentally healthy human being capable of living a full and rich life, or which create a mentally sick, frustrated, neurotic, and ineffective personality who is a burden to himself and a problem to his associates.<sup>18</sup>

Other writers who point out the necessity of facts and vocabulary usually are looking toward the broader goal of communication. However, they often consider communications inherent in their deeper aims of understanding, appreciation, and the ability to use scientific knowledge in everyday living. As one states it:

We want to learn the names of as many things as possible, so we may recognize them and call them by name as we would an old friend. But the naming is not too necessary . . . it is the awakening that we are after, the awareness of what is there to be had . . .<sup>19</sup>

Of the interviewees, nine included acquisition of facts or vocabulary in their answer, possibly due to the activity in which they are immediately engaged. All but one, however, enlarged their statements to include the use of these toward broader goals. "To develop a set of tools for young people . . . so they can read intelligently" was the statement of one. Others carried the idea further to include communication and understanding of scientific material.

Implied also in these answers was the transfer of factual learning to real life situations where an individual would use this knowledge to keep up with advances in the scientific world. Typical statements bearing this out are those which say that "the individual should be able to talk about and have some understanding of what is going on in the world of

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<sup>18</sup>Earl J. McGrath et al., Toward General Education (New York: The Macmillan Company, 1948), p. 102.

<sup>19</sup>B. Lamar Johnson, General Education in Action (Washington, D.C.: American Council on Education, 1952), p. 211.

science," that he should "be able to read and understand new material . . . and things that are to come," and "be able to acquire that vocabulary which will enable him to read scientific matter."

### Physical and Mental Development

As a part of the education for a more satisfactory personal life, the basic fundamentals of the physiological processes should be included in order that they might, as one source states it, ". . . serve to convince a person that there are better solutions for physical and mental ills than the highly publicized nostrums of the quacks."<sup>20</sup> This is not to suggest that the layman, through a general education course, will be able to diagnose and treat his own ills. It is, rather, pointed toward the development of a better understanding of the functions of the body that the student may be able to practice preventive hygiene and effectively evaluate the benefits of professional treatment. He who knows his body and its functions is less likely to be a hypochondriac.

One teacher expands this to include an understanding of man's behavior. He would develop "an understanding of man himself so he may realize on his own why he behaves as he does . . . and to appreciate other people and why they behave as they do." Another might have had this same thing in mind when he proposed to teach the student to "cooperate with the laws of nature." Possibly because the study of health and psychology is usually found in fields other than the sciences, writers and respondents alike made little mention of these factors in relation to the role of science.

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<sup>20</sup>McGrath et al., op. cit., p. 91.

## Scientific Methods

One of the objectives for the sciences that we most often hear is training in the scientific or analytical method, yet it is the most controversial. Because values, judgments, and critical thinking are all a part of the aims of general education, it seems the sciences should be able to shoulder their part of the load. Ideally the student would have an opportunity, through practice, to form habits of evaluating data or information on the basis of an impartial analysis of facts. Conant states:

What is necessary is the thorough knowledge of some small group of facts, the recognition of their relationship to each other, and of the formulae or laws which express scientifically their sequences. It is in this manner that the mind becomes imbued with the scientific method and freed from individual bias in the formation of its judgment. . . .<sup>21</sup>

On the other hand, some people would disagree about the effectiveness of such a program. One writer, saying that habit comes only with practice, questions "whether students themselves have an opportunity to practice such thinking as a part of instruction," or "whether the instructors are doing the thinking and the reasoning for them."<sup>22</sup> One questions that even a scientist, conditioned in the analytical processes of problem solving, will be able to transfer this method to his outside world. "In his own field the scientist is no doubt rigidly objective: . . . but, outside his subject and where his emotions are involved, he is no more objective or less liable to prejudice than the rest of us."<sup>23</sup>

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<sup>21</sup>Conant, op. cit., p. 6.

<sup>22</sup>Louis M. Heil, "General Education: Natural Sciences," Current Issues in Higher Education, 1956: Resources for Higher Education, ed. G. Kerry Smith (Washington, D.C.: Association for Higher Education, 1956), p. 213.

<sup>23</sup>Sir Richard William Livingstone, Education and the Spirit of the Age (Oxford: Oxford University Press, 1952), pp. 73-74.

Another writer maintains that, in submerging the student into the "group" as is done in general education programs, any instruction for critical thinking is next to impossible. He states that textbook writers and teachers alike seem to presuppose that a student will have this ability:

The assumption seems to be that, if the student is reasonably fortunate, he is from the start endowed with adequate critical powers. It is not a question of developing his powers to think critically, but merely of challenging him to use those powers. It is not an uncommon belief among educators at all levels that students either "have it" or "don't have it."<sup>24</sup>

More of the respondents gave the development of the scientific method as the role of science than any other single objective, many repeating it as an answer to what they considered the most important objective. They would develop in the student the "habit of careful, rational thought before attempting to answer a question," "the ability to do some critical thinking," "the analytical approach," and the ability to "think logically from a set of data to a conclusion."

Others say much the same thing concerning scientific thinking. They use such phrases as: "to enable people to look at things in a more scientific way," "to use objective thought . . . in any problem they come across," and "to test before making conclusions."

Such replies to the stated questions would make it appear that Oklahoma teachers believe their courses will instill the scientific approach in their students. However, in informal conversation following the interviews, almost every educator questioned the possibility of reaching this goal. Many felt that the best they could hope for from the general

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<sup>24</sup>Harvey M. Gelder, "Instructional Practices Which Promote Critical Thinking," Effective Practices in a Program of General Education, ed. Lucy Kangley (Dubuque: Wm. C. Brown Co., 1954), pp. 18-19.

courses is an understanding of the "scientific way," or the way of science. Others agreed with the findings in publications to which reference has been made. They say that some students are able to grasp the logical method of thinking, but that probably they were able to do this before entering the general education program.

### Knowledge and Understanding of Science

A study of the responses from the interviewees yields enough concerning the development of knowledge as the role of science to merit a discussion of that area alone. However, a closer look at the answer of each respondent, along with his replies to other parts of the question, shows that they use the word knowledge in its broader implications to include principles and concepts leading to understanding with the acquisition of knowledge implied as a prerequisite.

One author feels that it is the responsibility of general science courses to teach the understanding that is necessary to "increase the comforts and conveniences of life." He also adds that, in our modern age where the individual is surrounded by the products of science, ". . . if he is to derive maximum benefit from them he must have some understanding of their basic principles."<sup>25</sup>

Using the development of knowledge and an understanding of science as basic functions leading to integration with the entire general education program, The University of Chicago would present the materials of science while taking "cognizance of work which is going on serially or simultaneously upon related matters in the course of history, in the course

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<sup>25</sup> McGrath et al., op. cit., p. 92.



in the interrelations of the fields of knowledge, and in the programs of the humanities and social sciences."<sup>26</sup> In this particular part of their program it would seem that the role of science is the dissemination of knowledge.

B. Lamar Johnson would connect understanding of science with daily living, saying that ignorance has made "tens of millions of men and women victims of unscrupulous charlatans who appear to operate under the name of science."<sup>27</sup> He points to the tremendous sale of patent medicine, the gullibility of the public toward quack medical practices, and the insecurity, uncertainty, and fear that result from this lack of knowledge concerning the workings of science.

Krauskopf would teach a knowledge of science to dispel the mistaken ideas of the public toward the powers and limitations of science. In summing up his views regarding the matter, he says, "To regard science as a manifestation of evil; to regard it as an oracle to which all questions, both objective and subjective, may be appealed for an answer; to regard it as a near-deity or a criterion for moral law: these are the dangerous results of too little knowledge."<sup>28</sup>

Turning to the statements of the interviewees who would point to knowledge and understanding as the role of science in general education, one finds many of these same ideas, even though they may not be as clearly

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<sup>26</sup> Joseph J. Schwab, "The Natural Sciences," The Idea and Practice of General Education, ed. F. Champion Ward (Chicago: The University of Chicago Press, 1950), p. 149.

<sup>27</sup> B. Lamar Johnson, op. cit., p. 211.

<sup>28</sup> Krauskopf, op. cit., p. 59.

defined. One teacher covered a broad area when he said, "The role of the sciences is to provide the student a view of the general principles with respect to their fundamentals, to be used as a background for other kinds of learning."

Another would prescribe knowledge of science as a means for the student to "force back the clouds of ignorance and . . . look at things in a more scientific way." Applying the use of knowledge to dispel fears resulting from scientific advances, one respondent would educate the student to "be able to evaluate such headlines as those which tend to incite a germ warfare scare." Still another made the broad statement that the role of general science is "rounding out a body of useful information for the nontechnical student."

Parallel to some of the ideas of Krauskopf, one teacher would use scientific knowledge to dispel the wrong impression many people have in thinking "scientists are superhuman." He believes that "the more any student learns about science, the more he will become aware that anyone can comprehend the things of science if he will spend time with them." Another would have science lead to better social adjustment. He says, "Science is not the answer to all problems. If we just learn to live with each other, using knowledge of science to this end . . . the courses will have been worthwhile."

### Aesthetic Appreciation

In this overwhelming age of nuclear energy and man-made satellites, science as a means to aesthetic appreciation may be lost in the smoke of progress. Some writers completely omit the aesthetic values in science,

leaving a widening gap between science and the humanities. Killian, looking at it from scientist's point of view, states that "poets, historians and men of affairs are proud that they do not learn anything about science. . . ." <sup>29</sup> He feels also that for far too long the liberal arts have been given complete credit for carrying "the true gospel of man."

On the other hand, there are those who believe that only through a deep understanding of science can the freedom from fear and superstition that comes with truth be reached. One writer cites a quotation from Emerson, who believed that the objectives of science should be "an extension of man, on all sides, into nature, till his hands should touch the stars, his eyes see through the earth, his ears understand the language of beast and bird, and the sense of the wind; and, through his sympathy, heaven and earth should talk to him." <sup>30</sup>

The respondents, too, gave little emphasis to the possibility of developing an aesthetic appreciation as an objective in the role of science. Only two made replies that could be construed as tending toward the development of this area. One included this in a list of things that would require scientific knowledge for an individual to be an intelligent consumer. He felt that science was important because "we are going to be consumers, aesthetically, socially, and every other way." The other only implied aesthetic values in science when he said, "The role of the general sciences for the student is to see that everything has a purpose and a regular system behind it—a proof of God."

<sup>29</sup>James R. Killian, "Science Understanding," Science News Letter, LXIX (January, 1956), 18.

<sup>30</sup>McGrath et al., op. cit., p. 93.

Unclassified Answers

A few of the answers were so vague or general as to defy classification; others pointed to specific areas not included by writers or other interviewees. One would educate "practical scientists" to operate the many gadgets of modern life; another felt science was just "one of the facets of education." Possibly implying many things without making a concrete statement, one thought the role of science was to "study things that affect daily life." Although some included more than one factor in their statement on the role of science, ten gave no answer, one of these saying he had not thought about it.

Although this lack of answers from so many respondents would point a finger of accusation at their purpose in teaching the sciences, this did not prove true. Their replies to other questions and informal conversation indicate an understanding of the broader outline of the role of science, although they seemed reluctant to express it as such. It requires some time to sift ideas concerning role, definition, objectives, and philosophy. Some had not yet, in their thinking, made a distinction between these.

The Development of Citizenship as a Role of Science

In looking over the material collected for this section we find a great discrepancy between those interviewed and the writers on general education. The authors, in general, give the learning of subject matter more emphasis. Many concur in the belief that the general education program of colleges may provide the only background of science for "that body of educated men whose judgment must largely temper the public attitude toward

science."<sup>31</sup> None would question the growing need for a citizenry better informed on the implications of science in our complex technological society. Conant expresses this same thought, "We need a widespread understanding of science in this country, for only thus can science be assimilated unto our secular cultural pattern."<sup>32</sup>

As was pointed out earlier in the chapter, many of the decisions that will affect the future of science in America must come from the layman. The voter who has a part in governmental policies, the businessmen who may or may not sponsor scientific research, the men of the armed forces whose decision may affect the lives of thousands, must all at one time or another look to scientific knowledge as a basis for decision.

#### Communications

Using the term citizenship in its broadest sense—to include man's relationship to government and the social order of which he is a part, whether it be local, national, or international, we find communication mentioned again and again as one of the big objectives leading to better qualified citizens in our technological society. To refer again to Krauskopf:

If science is to be used to best advantage for the welfare of our country and of mankind, it is essential that general science courses teach future army officers, business men, politicians, journalists, and housewives enough about the subject so that they can talk intelligently with scientists and have some idea of their capabilities.<sup>33</sup>

Another author would stress scientific communication in order to give the student "some ability to distinguish between truth and supersti-

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<sup>31</sup> Julius A. Stratton, "Science and the Educated Man," The Wylie Bulletin, XXIX (Spring, 1956), p. 7.

<sup>32</sup>Conant, op. cit., p. 3.      <sup>33</sup>Krauskopf, op. cit., p. 65.

tion; some basis for judgment with respect to radiation effects, and other scientific problems an average citizen must consider."<sup>34</sup>

Carrying communications further to mean understanding that which we hear and read, another writer feels that science is important in order that we may get a "clear picture of our political, social, and economic environment." He adds that "unless we as citizens understand the possibilities as well as the limitations in science we shall find ourselves in constant danger of misinterpreting our total environment."<sup>35</sup>

One source emphasized the ability to read science articles so strongly as to devote an entire section to the matter, pointing out that for many students their only exposure to science is through general education courses. These writers would prepare the student to keep informed on scientific developments by reading news articles and popular writing throughout his life. The individual who acquires enough knowledge and interest to continue his reading is "able to function more intelligently as a citizen in the ever-expanding sphere of interaction of science and other disciplines."<sup>36</sup>

Some writers are found who in various ways deplore the inability of the public to understand the workings of the scientist. One of these

<sup>34</sup>Hope Hibbard, "Natural Sciences," Current Issues in Higher Education, 1956: Resources for Higher Education, ed. G. Kerry Smith (Washington, D.C.: Association for Higher Education, 1956), p. 223.

<sup>35</sup>Sidney French and Merrill P. Rassweiler, "The Physical Sciences," General Education in Transition—A Look Ahead, ed. H. T. Morse (Minneapolis: The University of Minnesota Press, 1951), p. 174.

<sup>36</sup>Paul L. Dressel and Lewis B. Mayhew, Directors, General Education: Explorations in Evaluations (Washington, D.C.: American Council on Education, 1954), pp. 104-105.

recognizes that "the mixture of awe, suspicion, and even fear with which the layman looks on our work is equally a clear indication of our failure to interpret science to him effectively."<sup>37</sup>

Looking now to the interviewees for an indication of the importance of communication in the role of science, we find this area was considered by most to benefit personal needs rather than to develop citizenship. These statements were included earlier in the chapter in the section on facts and vocabulary.

Several replies, however, might imply concern with communications as a means toward civic responsibility. One said the role of the general sciences is "to prepare lay people to talk with those in science." Others used such phrases as, "to acquaint people with the atomic era," "to train the student to be able to read and understand things that are to come," and "to enable them to read and understand what is going on in the world of science." Another enthusiastically says, "Science has a wonderful role to play because there is so much written today that people will be reading."

#### Management of Scientific Problems

Recognizing that the responsibility for promotion or control of scientific discoveries will fall more and more on the shoulders of Mr. Average American Citizen, one can see that general education is faced with the problem of providing the background for intelligent decisions by the layman. This is pointed out by Fuller, who states:

The healthy development of our body politic depends upon the present

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<sup>37</sup>Edward G. Fuller, "Education for Citizenship in a Technical Civilization," General Education in Science, eds. I. Bernard Cohen and Fletcher G. Watson (Cambridge: Harvard University Press, 1952), p. 154.

thought and action of some hundred million of our fellow adults and the future wisdom of thirty million youngsters now at various stages in their schooling, not to mention the twenty million of preschool age. The less than one per cent of us who are scientists have a heavy responsibility to see to it that the millions know enough about us and our work to maximize its benefits and minimize its misuse.<sup>38</sup>

Generally accepted by writers is the fact that only through a better understanding of science can come intelligent handling of the civic problems rising out of the scientific discoveries. One writer says, "It is the task of the social sciences to train the student to meet these social and political problems, but it is the business of the physical sciences to provide the background. . . ."<sup>39</sup>

Others would educate the layman in matters of science in order that scientists of the future shall not be required to "fight through thickets of erroneous observations, misleading generalizations, inadequate formulations, and unconscious prejudice . . . as did so many in the past."<sup>40</sup> Adding to this, another would "prepare the citizen . . . to be ready for change, to adapt himself to a new, and let us hope, a better world."<sup>41</sup>

One writer has suggested that students should prepare for citizenship by becoming informed "on where and how research goes on in university, industrial, and governmental centers; the role of foundations in supporting research; the Unesco programs; our government's Point Four program; and so on."<sup>42</sup>

<sup>38</sup>Ibid., p. 155.

<sup>39</sup>McGrath et al., op. cit., p. 92.

<sup>40</sup>Conant, op. cit., p. 15.

<sup>41</sup>Rene J. Dubos, "Science and the Layman," General Education in Science, eds. I. Bernard Cohen and Fletcher G. Watson (Cambridge: Harvard University Press, 1952), p. 15.

<sup>42</sup>Robert H. Carleton, "Science Teaching and Educational Aims Today," The Phi Delta Kappan XXIII (October, 1951), 104.



The interviewees, as we found in other instances, are aware of the need for educating the citizen for intelligent choices on matters concerning science, but again they speak in general terms. Even these are often buried in broader statements. Some of the phrases are, "to bring students to see the meaning and usefulness of science . . . to their country," "to prepare the student for participation in different aspects of community living that entails knowledge of scientific principles," and "to aid him in his role of good citizenship."

Possibly because the responsibility of citizens in shaping public policies on the control of scientific development is so recent, none of those interviewed specifically mentioned this as the role of the sciences in general education. Another reason for this omission could be the fact that such momentous decisions are so far removed from general education courses that any attempt toward this end in the general sciences would seem formidable. However, in the mind of this writer, the development of informed, responsible citizens who at a future date will vote on many of the crucial issues must not be omitted from the role of science. Add to this the probability that many of the political leaders of the future will receive their total formal learning of science through general education courses, and it becomes a matter of critical importance.

#### Science Compared with other General Education Courses

Administrators and teachers alike were almost unanimous in the belief that more science should be taught in the present age than has been taught in the past because of the technological advances which make it more important in everyday life. All believed it had a definite place in

the general education program for the non-science student.

It was interesting to note, however, that the teachers of the general sciences interviewed were almost evenly divided on the question of the importance of the sciences compared to other subjects. In every case, the answer was qualified to point out the importance of science along with the other courses, usually the social sciences or the humanities being mentioned. One felt that "science without the arts and humanities is worthless."

Seemingly, those who answered "yes" and those who answered "no" on whether science is more important than other subjects, would be at opposite poles. Such is not the case, however, as further study of their qualifications will show. One who thought science the most important would give it prominence because science is a "study of things that affect daily life." Another gave it first place because "so much of our philosophy in this age is interpreted in terms of scientific technology." Others said, "We are in dire need of scientists," and "science is more important than humanities." Further discussion brought out other qualifications in statements, such as, "Actually all areas are important," "cultural values are important too," and "science is not the whole answer."

The general feeling of those who thought science is not the most important was that no one area could top the list in educating the student. Science, to them, was only a part of "rounding out a body of useful information." Many added that more should be taught than has been in the past because of our expanding technology. One expressed a strong belief that it should not be given a disproportionate place because of these advances. Another felt that it is dangerous to place too much emphasis on science.

because "we have already created things that we have not learned to live with."

As one might expect, none would suggest omitting science from the general education program. An analysis of their statements shows that they believe each field has its place; none could stand alone. By way of emphasis one notes that in other sections it is brought out that almost none of those questioned felt that the amount of science now required is adequate.

#### The Most Significant Objective of the General Sciences

Hoping to get a concise, clear-cut answer on the single most significant objective of science in the general education program in the opinion of each teacher interviewed, the writer included a question to elicit this information. Because these answers grew out of the discussion concerning the role and objectives of the sciences, this is actually a summation of those views.

#### Scientific Method

Holding the number-one position in the minds of more teachers than any other objective, is that of attempting to train the student to think scientifically. As was pointed out earlier in this chapter, many agreed as to the difficulty of such training. Nevertheless, some of these same teachers continued to hold scientific thinking as the most significant aim in their teaching. The phrases they used are the same as those given previously. Typical of these are "critical thinking," "scientific method," and "scientific approach."

### Knowledge, Understanding, and Appreciation

Again we find that the respondents tend to think first of knowledge or facts of science, then often broaden this objective by adding how this knowledge will be used. Some, however, let the statement stand alone, as the teacher who said the objective he considered most significant was the acquisition "of knowledge of genetics and science." Another said much the same, merely adding a designation of the person whom he would teach. He would "acquaint the average layman in the field of science." Again using knowledge as a goal, one commentator felt the most important objective is to give the student "a little knowledge about all phases of science."

Giving the student an understanding of his environment was the objective of several, though they phrased it in various ways. Covering a wide field, one would "familiarize the layman with the living things and let him understand general theories and laws connected with life." Another would educate the student to "live more effectively in his environment." Six others specified the same general objective, that of teaching the student an understanding of the physical world about him.

### Other Objectives

Three of those interviewed felt that the most important single objective of the general sciences is to teach a scientific vocabulary that would enable the student to communicate on matters concerning science. This is one step toward equipping the individual for future learning in scientific areas.

Three persons gave single objectives not mentioned by anyone else. The first supposedly would teach for "terminal type experience," the second

seeks to present "the basis of evolution," and the third would include science in the general education program to provide a "well integrated curriculum."

### Summary

All of the material covered in this chapter, both from the professional writers and from Oklahoma teachers, indicates that the general sciences wear many aspects in the minds of those most concerned. No two seem to be in complete agreement on the role or objectives of the sciences, no single objective stands clear and free as the most significant. The simple learning of facts and vocabulary was held to be the most important aim of ten interviewees. One encouraging insight, however, is the fact that each seems aware of the growing need for citizens that are better informed in matters of science, a science that can bring forth benefits to mankind of which he has never dared dream, or a science that can bring destruction to the whole human race.

Almost as many gave as the principal goal that intangible, the development of scientific thinking. If there is an underlying unity to be found in these many and varied answers, it involves the desired change within the student from these courses. Looking at outcomes in terms of the student, one finds a consciousness concerning the worthiness of turning out an individual who understands and is better prepared to control his personal life and face his civic responsibility as a citizen in our technological, democratic society. This, then, might be considered the role of the general sciences in the general education program.

## CHAPTER VII

### PROBLEMS ENCOUNTERED IN CARRYING ON, ADMINISTERING, AND SUPERVISING THE PROGRAM

#### Introduction

The study moves from an analysis of the role and objectives of science in general education to the consideration of the problems that accompany the program. The next logical step is to survey the workability of such courses as they now exist, and to look for problems that may be hindering the meeting of objectives. After a discussion of the problems, there follows in natural sequence an explanation of attempts to alleviate the situation and to determine the success with which these attempts are being met. Questions were formulated to bring these things to the surface for analysis and evaluation. This chapter will point out the major problems facing teachers and administrators of general education. These aspects, then, will be developed further in later chapters, a separate chapter being devoted to each major area. Continuing the same pattern used in previous chapters, the opinions of professional writers in the field will be used for comparison and clarification.

Several questions were used to lead the people being interviewed into a spontaneous discussion that would begin with the problems, continue with their approach to a solution, and end with an appraisal. Question

eight is, "What, in your opinion, is the greatest problem in carrying on a program of general education in science?" The next four questions, nine through twelve are complementary to this. They are: "Have steps been taken to resolve or alleviate this problem?" "What, specifically, are those steps?" "Has the problem been solved successfully?" "If not, do you feel that it is something which lends itself to a solution?" Question thirteen asks, "If other than the problem above, what is the most crucial issue of general education in science?"

These questions were asked of all the persons interviewed in order that a broader view might be obtained. As would be expected, the answers varied with the position of each individual. There was, however, enough concurrence between the writers and those interviewed concerning the problems encountered, to group them into a few areas. The discussion of the grouped problems was then expanded. The most troublesome areas, seemingly, related to the attitudes of teachers and students toward the sciences in general education, the confusion brought about by the vast array of subject matter with so little time in which to present it, the methods of presenting this material, the difficulty in acquiring and keeping qualified teachers, the unpreparedness of the student for science courses, and the lack of specific objectives.

### Problems and Crucial Issues of General Education in Science

#### Attitudes

In this modern age when life is geared to jet speed in search for the shortest route to the pot of gold at the end of the rainbow, many students are resentful of any course outside their major field that will slow

down the acquisition of the coveted sheepskin. Their feelings may vary from one of resignation to outright rebellion at the required general science courses. Clearly, this indicates a lack of understanding of the importance of some knowledge of science to the layman.

Pointing out several reasons why students fail to see the importance of science, one writer states, "This instruction may fail to make connection with things important to them, . . . Immediate application to their needs and problems is sometimes not explained, and very often the vocabulary employed and examples chosen in the instruction are unfamiliar."<sup>1</sup>

Other writers have sensed a student resentment of the sciences. Rogers, including all science instruction in his criticism, has written:

Yet a few years of science classes . . . will deaden the enthusiasm of almost any student. A few emerge still determined to be scientists--but even they have a strange picture of science as a sort of stamp collection of facts, or else a game "of getting the right answer." For the majority, well-meant teaching has built a wall around science, a stupidly antagonistic wall of ignorance and prejudice.<sup>2</sup>

B. Lamar Johnson quotes one junior college administrator who points out one of the basic flaws in many general science courses; namely, that of failing to relate it to life's problems. He says:

During my first year in college I took a course in Zoology, not because I wanted to but because the college required a course in science. This course to me appeared to be the lesser of evils. . . . The closest that this course came to applying science to my life as a layman came at the moment that the instructor explained that the digestive

<sup>1</sup>Louis M. Heil, "General Education: Natural Sciences," Current Issues in Higher Education, 1956: Resources for Higher Education, ed. G. Kerry Smith (Washington, D.C.: Association for Higher Education, 1956), p. 220.

<sup>2</sup>Eric M. Rogers, "Science Courses in General Education," Science in General Education, ed. Earl J. McGrath (Dubuque: Wm. C. Brown Co., 1948), p. 1.



system of the frog is quite similar to that of a human being. . . .<sup>3</sup>

Another writer describes the method of teaching science by saying it requires students to memorize formulas and definitions and "generally overload his mind with dogmatic assertions." He adds, "It is no wonder that so many of our students, their minds offended by rote learning, come to us with an open hostility for, and even a hatred of sciences."<sup>4</sup>

Oklahoma educators, too, were aware that required science courses in general education are seldom looked on with enthusiasm by the student. There is a noticeable difference, however, in their opinions concerning the reasons for this feeling. The writers blame the method of presentation, whereas the interviewees agreed that it was the result of our emphasis on specialization. One said that "students try to get a degree too hurriedly," implying impatience with a course not in their major field. Another, saying much the same thing, felt that "students want to specialize too early and show little interest in any general education courses." Still another stated merely that his students "lacked the desire to pursue science."

More of those interviewed placed the cause for student apathy toward the general sciences more on the demand for specialists than on any other single factor. A teacher said that "the demand from industry and the business world that the graduates come out as specialists" was the greatest problem he faced in carrying out his part of the general education

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<sup>3</sup>B. Lamar Johnson, General Education in Action (Washington, D.C.: American Council on Education, 1952), pp. 203-4.

<sup>4</sup>I. Bernard Cohen, "The History of Science and the Teaching of Science," General Education in Science, eds. I. Bernard Cohen and Fletcher G. Watson (Cambridge: Harvard University Press, 1952), p. 73.

program. A chairman, taking another view nearer that of the student who opposes the general science courses, said that the greatest problem for the college is "to arrange the general education program in such a way as not to interfere with students trying to prepare for a profession." From his answer we surmise that he was aware of the resentment of the students and would like to attempt a solution. Further discussion showed he was concerned lest the student be required to take so many hours of general education courses that he would not be able to obtain the necessary requirements in particular fields to qualify him for positions under civil service or to meet the standards set up by the American Chemical Society.

This section on teacher attitudes has been included because three administrators and one teacher expressed concern that teachers in the general sciences, who had been in many cases recruited from specialized fields, were not able to accept the philosophy of the general education program. The writers, on the other hand, had little to say on the matter of teacher attitude, stressing, rather, the difficulty in training and acquiring teachers. This phase will be discussed at greater length in Chapter VIII.

At least two references can be used to point out this problem of attitude, however. The first of these writers is chairman of a natural science department. He says of research scientists:

. . . many of them take the attitude that general courses in science are not in their province. Such courses are consequently delegated to philosophers of science, science educators, historians of science, science Ph.D.'s who did not quite make the grade in research, able young men who will move out of the general course as soon as they can, reputable scientists in their dotage, and a few queer souls who are unaccountably so occupied for possible psychiatric reasons or through misguided idealism.<sup>5</sup>

<sup>5</sup>Benson E. Ginsburg, "Articulation of General Education Courses

Granted that this statement may be extreme, if such an attitude prevails among specialists at all, is it any wonder teachers resent giving time to the general science courses?

Other writers feel that the reason the philosophy of the general education program has not infiltrated into the thinking of the specialist is that he has not, like the administrator, had the opportunity to attend meetings or to read the literature in order to become familiar with the issues. One reference states, "The average faculty member is trained as a specialist and his affiliation with his own professional society, . . . journals and books consume any money he may reasonably be expected to assign to his professional advancement."<sup>6</sup> From this statement it appears that he does not place the blame on the teacher, but on the circumstances which deny him participation in the planning phases of the movement.

A comparatively stronger emphasis came from the Oklahoma science teachers on the fact that specialists are either not able or not willing to adapt their teaching to the general education level. A dean said, "One of the greatest problems facing us now is finding a trained staff willing to recognize the concept of the general education program." A chairman expressed the same feeling when he said the greatest problem is "converting the specialists to accept the philosophy of general education." Another administrator spoke of "the difficulty in obtaining a qualified faculty for the general science courses." A teacher who used this approach

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with Advanced Science Courses: University of Chicago," College and University Bulletin, IX (February, 1957), 4.

<sup>6</sup>Paul L. Dressel and Lewis B. Mayhew, Directors, General Education: Explorations in Evaluations (Washington, D.C.: American Council on Education, 1954), p. 255.

termed it a problem in "getting well-rounded personnel," implying someone other than a specialist.

A possible reason that this aspect loomed so large in the minds of Oklahoma educators is the fact that in the colleges surveyed each specialist in the science department was required to carry his share of the load of the general education science courses. While most of these people paid lip service to the general education program, many of them found it difficult, if not impossible, to change their entire teaching approach and philosophy when the bell rang, taking them from a technical course to one of general science.

The administrators were aware of this difficulty as, indeed, were the teachers themselves. One chairman pointed out the great effort his school made to "indoctrinate" new faculty members with the aims of the general education program. He says, "We preach it regularly," and further added that it was no longer a problem in his school; however, the fact that administrators continued to "preach" on the subject indicates that the idea of general education had not yet been entirely accepted.

#### Course Content

The curriculum of the general education program and the content of the science courses are important enough to merit a complete chapter. However, the question of selecting the course content from the vast array of knowledge available to the modern teacher with so little time in which to present it has been stated as the greatest problem by seven teachers. For this reason, this phase of the matter will be discussed here, but only to the extent that it was mentioned by those interviewed.

Almost every writer who attempts to analyze the program of general education gives a great deal of attention to the matter of course content, especially those who write concerning the sciences in general education. However, two references will serve as a comparison with the statements from the interviewees. Heil, in writing on the status of science instruction in general education, deals with the appropriateness of certain concepts and ideas pertaining to modern science, both physical and biological. On this he says:

The present scope of both these fields is so great and so full of significance as an aspect of general education that instructors of science for general education must find themselves more and more perplexed regarding the basis for making a selection of concepts and generalizations from these areas of knowledge.<sup>7</sup>

Looking toward a solution to this, Heil also recognizes that all students should acquire some principles and concepts as a background for understanding scientific matters, but the content of the course should be based on the individual school situation. He states that "students with different backgrounds and in schools where different experiences are possible will profit best from the selection of topics and principles most closely related to their experiences."<sup>8</sup> Thus the problem continues to rest upon the shoulders of the administrators and teachers in the individual colleges.

That it is met with concern by Oklahoma teachers is evident from replies of seven teachers who classified content as the greatest problem.

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<sup>7</sup>Heil, op. cit., p. 222.

<sup>8</sup>Louis M. Heil, "The National Sciences in General Education," The Fifty-first Yearbook of the National Society for the Study of Education, Part I: General Education, ed. Nelson B. Henry (Chicago: The University of Chicago Press, 1952), p. 63.

A statement typifying the problem of selecting subject matter was, "In science we have about the same reaction to the presentation of material as Fibber McGee has when he opens the closet door and the whole thing falls out." Expressing the same thing, one replied informally that "it seems almost impossible to get across enough ideas of general education in the general physical science to do much more than just muddle a fellow up." He questioned the ability of many students to comprehend the material in the limited hours allotted to the course.

Others, too, complained of too little time to present so much material. One said, simply, "There is too much to learn and not enough time." Another felt that not enough hours in the general education program were given to the general sciences. Two more stressed the limits of time and were concerned with "just what should be included" and "selection of material." Looking at it in terms of the student, a teacher showed his perplexity in the evaluation of the contents of his course. He said, "I wonder if we really have selected the things in a curriculum that are actually the ones we need; if we are able, out of all the masses of accumulated knowledge, to select those particular units that will best serve the needs of our students."

Although these expressions of uncertainty might point to the inadequacies of the teachers questioned, it is entirely possible that those who show awareness of the present shortcomings of our teaching program are the very ones who will become leaders in any improvement in the future. At least there was an absence of complacency as to the effectiveness of the general science courses in meeting student needs. If there are weaknesses in the existing programs, it is only through the discerning few who

point out these problems that a better curriculum can be effected.

### Objectives as a Problem

This section might bear the title "lack of objectives" since this seemed to be uppermost in the minds of the few teachers who mentioned it as a problem. This is an area given much more prominence by the writers than by those interviewed, possibly because the teachers are so close to the actual attempts to reach these objectives that their immediate problems would necessarily be given first place in their minds. As the earlier chapter on the role and objectives of science pointed out, the goals were many and varied, depending on the position of the individual. Some writers, however, question any awareness on the part of the teacher in relation to objectives.

After setting forth the place of science in general education, according to the Report of the President's Commission on Higher Education, as "to understand the common phenomena of one's physical environment, to apply habits of scientific thought to both personal and civic problems, and to appreciate the implications of scientific discoveries for human welfare," one writer says:

Much as one would be inclined to subscribe to these most worthy objectives, one is immediately confronted with doubt about both their real meaning and the means of accomplishing them through the sort of educative process which springs from any past teaching of science. In fact, the "academic" question is immediately raised as to whether any of these objectives can be attained through any type of course in science.<sup>9</sup>

Another source takes a more optimistic view of the probability of

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<sup>9</sup>Sidney French and Merrill P. Rassweiler, "The Physical Sciences," General Education in Transition—A Look Ahead, ed. H. T. Morse (Minneapolis: The University of Minnesota Press, 1951), pp. 158-69.

reaching the goals of the general sciences and recognizes the importance of teaching that is aimed toward specific goals. Quoting, "A clear understanding of these goals and their importance is imperative if we are to fashion a worth-while science curriculum in the general education program."<sup>10</sup>

Another writer points out the fallacy in assuming that stated objectives will be used as a guide in teaching. He feels if they are not being followed "there is little point in stating them."<sup>11</sup> He adds, it appears from the words of administrators and the results of questionnaires that "getting faculty co-operation and support is one of their major concerns in establishing and maintaining programs of general education."<sup>12</sup>

From the criticism by the writers, attention is turned to the respondents for substantiation or denial of these charges. Each of the six colleges surveyed had on record the stated objectives of each field of study. These objectives were required as a part of the certification program and were drawn up through the joint efforts of administrators and teachers as a result of study groups. However, as presented in Chapter VI, devoted to the role and objectives of science, it is apparent most teachers rely on their own judgment concerning the expected outcome of the courses.

<sup>10</sup>Earl J. McGrath et al., Toward General Education (New York: The Macmillan Company, 1948), p. 90.

<sup>11</sup>Harold B. Kunkel, "Problems of Instruction," The Fifty-first Yearbook of the National Society for the Study of Education, Part I: General Education, ed. Nelson B. Henry (Chicago: The University of Chicago Press, 1952), pp. 196-7.

<sup>12</sup>Ibid.



In answer to this particular question regarding the greatest problem in carrying out a program of general education in science, only one interviewee, a teacher, stated that "identifying the goals" was a problem. However, many others were aware of the problem as was pointed out in the previous chapter. Some of these voiced the opinion that, in spite of their attempts to reach stated goals, they had serious doubts that these were being reached.

#### Student Abilities

It was surprising to note that as many as ten of those interviewed gave as all or part of the greatest problem in the general science program the lack of background in science of the students or their inability to comprehend the course content. However, realizing that the general science courses are a part of the general education program required of almost every student in these colleges, it is only to be expected that there will be wide divergence in student capability.

The writers also recognize this problem of divergent abilities. One says: "Certainly there is nothing reassuring about the heterogeneous crowd of freshmen which appears on the typical American college campus the opening day of school."<sup>13</sup> A more optimistic view is taken by another writer interested in teaching the general sciences. He states, "Whatever the student's background, to some degree he or she is curious about the world in which we live."<sup>14</sup>

<sup>13</sup> McGrath et al., op. cit., p. 54.

<sup>14</sup> James B. Conant, Education in a Divided World (Cambridge: Harvard University Press, 1948), p. 126.

It is probable that the whole matter in the minds of the writers reverts to the question, discussed in Chapter IV on objectives as to whether education will be for the benefit of all or the gifted few. One writer, feeling it a mistake to attempt an equal education for the masses, states:

In this country we tend to perpetuate in the university the attitudes and character of the secondary school. In a large measure I believe this is the consequence of our national inclination to average down the standards of higher education in order to accommodate all those who aspire to a college degree . . . we weaken or destroy intellectual initiative; we forget that the development of intellectual self reliance is more vital than the accumulation of factual knowledge; we fail to keep pace with the maturing mind of the student.<sup>15</sup>

Some of the teachers interviewed felt that the greatest problem in teaching the general sciences was getting the ideas across to students who were unable to read with comprehension. One went so far as to say that some of his students "can't read with the understanding of a sixth grader." Another said that "students do not read widely enough, being content with the text alone." Probably referring to a weakness in ability to read, along with other things, one teacher stated that "some of the students are just not of college caliber."

Lack of background in science was another problem recognized by the teachers. One said the students' "technical background is inadequate for college science classes." Another felt the same way. He said, "If they had had a background of science in high school they would be more inclined to pursue it here." Stating that "getting students to realize the importance of education in science" was his greatest problem, one

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<sup>15</sup> Julius A. Stratton, "Science and the Educated Man," The Wiley Bulletin, XXIX (Spring, 1956), 5.

teacher took a dim view of reaching objectives until attitudes and habits are changed.

Five teachers attributed their problems to the number of students enrolled in their classes. Not only did this give them a load too heavy to allow for ample preparation, but it interfered with efficient instruction. These problems, however, will be discussed at greater length in the chapter on teachers.

#### Methods of Presentation

Because part of a later chapter is devoted to the methods and materials of the general science courses, this matter will only receive the attention here that is required to develop the problems mentioned by the teachers concerning the relation of the sciences to the general education program. Here, again, the specialist is discovered attempting to adapt his established methods to the general courses. He finds that, while the expected outcomes for the specialized courses are relatively fixed, the objectives for the general sciences are more intangible and more difficult to evaluate. Also, more integration is needed if science is to contribute to broader goals of the general education program.

A study of the writings on this subject yields several suggestions as to the methods best adapted to teaching the sciences in general education. The "Block and Gap" method seems to be a stock phrase. Many would teach from the point of view of the history of science. Others advocate laboratory or lecture methods. These and any others that are prevalent will be considered in a later chapter. The purpose here is to establish the thought that methods of presentation are merely devices designed to

reach the goals of general education. Wynne says:

. . . the ends of general education place the emphasis on qualities of experience rather than on subject matter. Therefore, if college teachers are to realize the ends of general education that are desirable, they must select their procedures not primarily with a view to promoting the learning of subject matter, but with a view to fostering certain qualities of experience rather than others.<sup>16</sup>

Another writer, recognizing the fact that methods are devices that may vary from teacher to teacher or institution to institution, states:

Although great diversity remains in the teaching methods . . . of general science courses, nevertheless the significant questions on which disagreement persists are mostly of secondary importance. . . . It is perhaps a sign of maturity in the development of general science courses that most arguments now are about this kind of question; but it is likewise a sign of continuing vigor that discussions of these questions are still frequent and heated.<sup>17</sup>

The administrators in the six Oklahoma colleges were most concerned with training the teachers to think in terms of general education objectives rather than mere subject matter. A dean pointed this out in his statement, "Our greatest problem is getting a trained staff willing to recognize that the general education program concepts differ from the straight academic concept of subject matter." In further discussion he stressed the need for "cutting across departmental lines" to meet the common goals. A chairman from a different school said his biggest problem was "to lead the teachers to develop an acceptable philosophy and set of objectives.

The teachers, too, recognized the problem. One said, "We must realize it is our duty to teach courses with the idea in mind that we are

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<sup>16</sup>John P. Wynne, General Education in Theory and Practice (New York: Bookman Associates, 1952), p. 105.

<sup>17</sup>Konrad B. Krauskopf, "Science in General Education at the Mid-Century," The Journal of Higher Education, XXII (February, 1951), 60.

broadening their education and giving them some background in our particular field." Another referred to the promotion of analytical thinking as one of the broad goals of general education when he said, "Anybody can spoon feed another person, but to make him think is something different." Four more teachers included meeting the general education goals as a part of their answer to the query for their greatest problem. One said, "The courses must be integrated to some extent to contribute to the common ends." Three expressed the thought that the sciences must be kept on a level with general education if they are to contribute to the over-all goals of the program.

It is encouraging to find that so many are aware of a need for the integration of the sciences with the goals of the general education program. In almost every school there was one person who believed so strongly in the philosophy of general education that he almost served as a champion spreading his beliefs to those around him.

#### Teachers of Science in General Education

Many of the problems relating to teacher attitudes toward the general education program have appeared in previous sections. Enough special problems relating to teachers were mentioned, however, to warrant a separate discussion. The matter of getting and keeping trained personnel willing to accept the philosophy of the general education program was uppermost in the minds of many of the Oklahoma educators as well as the writers. B. Lamar Johnson deals with this specifically:

The problem of training teachers in any field is difficult. The problem is particularly difficult in the field of general education. . . . Those who effectively contribute to the goals of general education must possess wide-ranging vision, a sense of interrelationships

among materials commonly divided and widely separated in standard academic patterns.<sup>18</sup>

Later in the same chapter he expresses the fear that it will be many years before enough capable people are recruited and trained to meet the growing demand for general education teachers. Another writer adds a comment to this that was repeatedly brought out by the Oklahoma educators. He says, "One of the most fundamental hindrances to the development of . . . general education is the lack of instructors who believe in the program and who are trained to teach it."<sup>19</sup>

Another problem besetting the teachers of science in general education is a lack of time to devote to studying the objectives of the program. As one writer puts it:

Many science teachers may at once object that they are already badly pressed for time. There is so much ground to cover, and so much is added day by day, that the teacher is engaged in a continuous struggle to encompass the subject matter.<sup>20</sup>

Closely related to the shortage of time for teachers of general education is the problem of handling the increasing enrollment and crowded class rooms. An article states:

In the face of the postwar rush, some staff members figuratively threw up their hands in despair and tried to get through the difficult period by cutting corners in the sense of reducing a course to textbooks, lectures, and final examinations.<sup>21</sup>

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<sup>18</sup>Johnson, op. cit., p. 381.

<sup>19</sup>Eleanor F. Dolan, "General Education: Definition and Aims," Current Problems in Higher Education, 1947, ed. Ralph W. McDonald (Washington, D.C.: Department of Higher Education, 1947), p. 87.

<sup>20</sup>James B. Conant, General Education in a Free Society (Cambridge: Harvard University Press, 1945), p. 155.

<sup>21</sup>H. T. Morse and Russell M. Cooper, "Problems of Implementing Programs of General Education," General Education in Transition—A Look

Probably the most discussed aspect of getting and keeping qualified teachers concerns salaries. One states:

Most of us will agree, I suspect, that compensation levels in the teaching profession are too low. . . . Because of this, teaching no longer attracts its share of the nation's creative young talent. . . . The "psychic income" of teaching for those who really belong in teaching is very real. But this "psychic income" is now threatened by the inadequate salaries that prevail in the profession today.<sup>22</sup>

In answering question eight concerning the greatest problem in carrying on a program of general education in science, at least fourteen of the interviewees mentioned the difficulty in getting qualified teachers or in training the present personnel in the philosophy of general education. The administrators, especially, were cognizant of the problem. A dean said his greatest problem was in the "preparation of faculty members to accept the responsibilities of leadership in teaching general education courses." From another college came almost the same answer, the president calling it "training personnel" and the dean saying the problem was to "train the faculty in terms of general education." A president and a departmental chairman from different schools were both attempting to "convert the specialists" to the objectives of general education.

Nor did the teachers, themselves, lack insight. One said, "The problem is to find professors who are convinced of the worth of general education." Others mentioned such things as, "finding qualified teachers," "getting the proper personnel," and "getting the teachers to see

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Ahead, ed. H. T. Morse (Minneapolis: The University of Minnesota Press, 1951), p. 296.

<sup>22</sup>Donald H. Morrison, "The Faculty as a Source of Strength," Current Issues in Higher Education, 1956: Resources for Higher Education, ed. G. Kerry Smith (Washington, D.C.: Association for Higher Education, 1956), p. 120.

the value of integrating the branches of general education." Another showed a definite opinion in discussing teachers when he said, "Quality, quality, quality!"

Teachers, like the writers, found the time element a problem in facilitating the general education program. Three thought the heavy class loads and the demands on them for "other things" were a definite hindrance to their teaching programs. Two mentioned the fact that there was not enough time for conferences, either in the departments or between the departments, to plan a program or to evaluate existing ones. The other recognized the need for more preparation time for his large classes.

Very surprising, in this day of emphasis on the monetary success of the individual, is the fact that only one person mentioned salaries as being a factor in acquiring qualified teachers. He expressed concern that the best students do not go into teaching. He said, "They laugh at us if we suggest teaching as a profession. It's that dollar mark!"

#### Attempts at Solutions

Following the discussion with the respondents on the problems and crucial issues in carrying on a program of general education in science, questions were asked to discover what steps are being taken to alleviate these problems. This led to the matter of the success with which these attempts were being met, or, in the opinion of the interviewee, if these problems actually could be solved.

Because each statement in this area will necessarily pertain to individual institutions or classes, no attempt will be made to include the solutions suggested by the writers. As the separate problem areas



are developed in later chapters, the references will be used along with ideas from the interviewees to point toward any changes that may be needed.

### Study Groups

Indicative of the attention being given to the problems of meeting the objectives of general education is the fact that each of the six Oklahoma State Colleges at the time of this study had, or did have, a study committee appointed for this purpose within the past few years. These faculty study groups had been leaders in bringing about major changes and are looked to with optimism by many of the administrators concerned with establishing and reaching the goals of general education.

There seemed to be a consensus that the study groups will prove the vehicle for solving most of the problems of interpreting the goals of general education and will point the way toward better cooperation within the institutions. None said that the problems were completely solved; but, as a dean said, "It is in the process." A president believed the committees were "gradually" helping to alleviate the difficulties with the cooperation of each department. Another said, "We are doing a better job each semester."

Though many of the teachers interviewed were aware of the work being done and some had served on committees, few mentioned it to any extent. One showed a lack of enthusiasm when he said he "presumed it had helped some." Most, however, related their answer to the previous one in which they had stated more individual problems.

### Individual Attempts

The teachers who had difficulties in teaching the sciences because

of the inadequate background of students saw little hope for alleviating their problem. One said the only solution was to require entrance examinations; two would place the burden on the high schools to prepare students for college work. Each, however, had doubts that this would be possible. One said, "It goes into social, economic, and political implications beyond our control." He expressed the belief that the entire philosophy of education throughout the nation would have to change before improvement in the situation could occur.

Working directly toward improving student attitudes on general education, one pointed to the freshman orientation classes as an attempt to promote understanding. Another felt that better guidance was the solution, expressing the opinion that many advisers were not capable of accomplishing their aims because they lacked contact with industry. One teacher said it was "merely a matter of time and educating the public to the idea of general education."

As was mentioned earlier, most teachers of sciences in the general education program in these Oklahoma Colleges were specialists. Realizing that the goals are different, some teachers were making attempts to change their own method of presentation to meet the broader objectives in the general courses. One teacher expressed this belief and said he was "taking steps, personally, to alleviate the problem, but it has not been solved completely." Another showed less insight when he stated he had done reading on the areas of general education, but believed "it is largely a problem for administration." Still another stated, "It is an individual problem, but the study groups have benefited some."

Those who had mentioned lack of time or being overloaded with stu-

dents saw little hope for alleviating their problem. However, one said, "We are trying. I think it can be solved." Two did not agree, saying that "there is just not enough time and no immediate solution is apparent."

A unique suggestion came from one science teacher who believed that the only way to reach the objectives of general education is through more qualified teachers. As a means to recruiting and keeping these people, he would have industry subsidize the salaries of science teachers. He probably reasoned that they could afford to do this because the schools would produce more and better scientists.

#### Administrative Steps

Besides organizing and encouraging faculty study groups on the general education program, the administrators seemed to be well aware of the problems of the teachers. A dean mentioned attempts to "convert the specialist." Another talked of "in-service training in integration between courses." However, almost without exception, the presidents stated that they were keeping the general education needs in mind when they hired new staff members. One said he always asks each applicant for an opinion on general education before hiring him. The others said much the same thing. A note of optimism comes from a chairman who said, "We just keep pointing the way, and so far so good."

#### Conclusion

In this chapter the problems and attempted solutions are stated clearly enough that no summary is required as a distinct unit. However, further consideration does need to be given to some of these problems. A few of these situations seem not to lend themselves to an immediate solu-

tion, yet they may be found on the agenda of those who look to long-range improvement. They concern obtaining qualified teachers, limiting the course content to fit the time available for instruction, and the abilities and backgrounds of students who enter college.

A problem which can be improved in the immediate future, however, is that of orienting present teachers in the objectives and philosophy of science in general education. Though all of the schools have at one time or another attempted institutional self-study, often the only teachers benefiting from this program are those who volunteer because they are already sympathetic with general education. Ironically, it is those teachers who most need enlightenment from study committees that fail to participate. Evidently some plan is needed whereby all teachers engaged in general education can be induced to work on this self-evaluation.

## CHAPTER VIII

### APPRAISAL OF THE TEACHER IN GENERAL EDUCATION AND STEPS TOWARD IMPROVEMENT OF THE PROGRAM

As evidenced by findings thus far, it is obvious that the problems facing the general education program in science relate either directly or indirectly to the teacher. Some are concerned with the student and reach toward the teacher; others start with administration and reach toward the teacher. The teacher's position is that of mediator for administrators, selector of books, and coordinator of curriculum; on the other hand his knowledge and understanding must be adequate to comprehend the student and his needs. In the words of Dunkel:

Buildings, curriculums, administrative organizations, books, laboratories, and gadgets may constitute sources of much potential educational power, but the transmission belt which brings this power to bear on the raw material and turns out the finished product is the man with chalk-dust on his sleeves.<sup>1</sup>

Because the teacher is indispensably fundamental to the success of any educational program, this chapter will be an appraisal from the viewpoint of the teacher, as well as from the viewpoint of the administrator, concerning the instructional role in the implementation of the general

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<sup>1</sup>Harold E. Dunkel, "Problems in Instruction," The Fifty-first Yearbook of the National Society for the Study of Education, Part I: General Education, ed. Nelson B. Henry (Chicago: The University of Chicago Press, 1952), p. 190.

education program in science. A total of 38 questions were designed to bring about a comprehensive discussion in this area. Many of these questions were directed to the presidents and deans only. Others were designed to elicit teacher opinions.

Discussions evolving out of these questions concerning the appraisal of the teacher in general education and the steps toward improvement of the program may be broken into five broad areas. The first is concerned with the acquisition of teachers who will participate in general education and the plans for reorientation of the existing staff of specialists who must teach general courses. These questions were directed to the presidents, deans, and chairmen upon whose shoulders, in the final analysis, the responsibility falls. The second major consideration is to determine from administrator and teacher the currently prevalent attitudes toward general education. Most of these questions were asked of all those on the interview list.

The third and fourth areas seek to discover what is being done to develop a more effective program of general education in science through teachers, and the success with which these efforts are being met. The fifth division, then, is to analyze the position of the teacher with regard to his teaching load and the time he may have available to improve his instruction in the general education program.

Because of the large number of questions required to obtain coverage of the information needed for this chapter, the form in which they are presented will deviate from that of previous chapters. This will show itself largely in a tendency to group several questions to be treated as a unit.

The Teacher of General Education

## Available Teachers

The problem of the staff in general education courses, especially in the sciences, seems to be a crucial issue with the writers and Oklahoma interviewees alike.

In order to discover the status and qualification of the general education staff, the presidents and deans were asked question 95, "Has it been necessary in the main to enlist the general education staff from the departmental groups, or have you been able to seek teachers who have been trained as teachers of general education classes?" Question 98 added to the information by asking, "At the beginning of the program, what kind of teacher with respect to preparation and philosophy was available?" The last of the questions, number 99, which related to teacher availability, was, "In your experience, have teachers qualified both in subject matter and attitude favorable to general education been available?" Question 97 was asked of the presidents, deans, and teachers. It was, "What kind of teacher is desired as a teacher of science in general education with respect to subject matter preparation? With respect to attitude or philosophy of general education?"

There has been much controversy on the relative value of teaching by the pure scientist versus the individual with special training as a teacher in general education. It has reached such proportions that the College and University Bulletin devoted the entire March, 1957, issue to the matter. Among those who advocated a change to the generally prepared teacher was one who would do so in order that the teacher would not be

"limited to the narrow framework of an academic discipline."<sup>2</sup> This same writer makes a direct attack on the feasibility of using the specialist in general courses. He states:

It is my contention that the traditional Ph.D. program nullifies the likelihood that the teacher will become flexible and imaginative about using the content of his specialized knowledge in many different ways. The flexibility and imagination will most likely be trained out of him by the program of academic specialism.<sup>3</sup>

Those who take the opposite view base their arguments on the contention that the specialist will be more "scholarly" and more able to bridge the gap between general and professional education. Pooley says, "The subject-trained candidate will have the benefit of the foundations of scholarship in a specific field in order to live, work, and think as a scholar."<sup>4</sup> Another writer in this same series fears that the non-specialist will fail to gain the respect of the more intelligent students, that they will have "a tendency to resist his teaching because he is not known as an expert."<sup>5</sup> He also points out that "the man without the usual Ph.D. training may be, or may feel that he is, a kind of 'second class citizen,' and may find himself cut off to some degree from his faculty colleagues."<sup>6</sup>

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<sup>2</sup>Harold Taylor, "Graduate Preparation of Teachers of General Education—A Controversy, I. For Change," College and University Bulletin, IX (March, 1957), 3.

<sup>3</sup>Ibid., p. 4.

<sup>4</sup>Robert C. Pooley, "Graduate Preparation of Teachers of General Education—A Controversy, VI. Against Change," College and University Bulletin, IX (March, 1957), 3-4.

<sup>5</sup>Kenneth B. Murdock, "Graduate Preparation of Teachers of General Education—A Controversy, V. Against Change," College and University Bulletin, IX (March, 1957), 3.

<sup>6</sup>Ibid.



Others take the middle road and say that some specialists are able to adapt to general education courses while others are not. One writer points out that:

An instructor who is so preoccupied with his academic specialty that he regards it as a vested and inviolable interest will not perform well in a general education situation. Instructors are needed, on the other hand, who see the possibilities in interdisciplinary approaches to the solution of common problems of the day, and who recognize opportunities for integration of various kinds of knowledge in public service, business and industry, the professions, and vocations outside education can be advantageous to the imaginative teacher of general education.<sup>7</sup>

The answer to the question concerning the source of teachers for general education was almost predetermined by circumstances. The administrators of the six Oklahoma colleges had no choice but to recruit their general education staff for the sciences from the regular faculty of specialists. As one president put it, "We had to do the best we could with what we had." All, however, had made some effort toward training their teachers in terms of general education. One said, "We try to orient them to general education in small group meetings." Another, using a stronger term, stated, "They had to be taken from specialized areas and indoctrinated for general education." A dean remarked, "It was necessary for us to work toward and gradually evolve a different attitude on the part of the faculty." An optimistic view was taken by a president who said, "It took some time for the teachers to realize the purpose behind the program; but, now that they realize it, they are making a good contribution."

In discussing the qualifications they would seek in employing

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<sup>7</sup>Leighton E. Johnson, Fostering General Education in the Community College, Professional Series Bulletin No. 14 (East Lansing: Michigan State University, 1956), p. 6.

additional staff members, there seemed to be two schools of thought; all, however, aimed toward the same thing—a broad background. Two of those interviewed would prefer teachers with experience in public schools. One said, "We like to employ teachers who have taught in the elementary or high school but they are not always available." The other replied in much the same way but added, "We want competency first of all."

Those who looked for a broad background in formal schooling also looked for other elements. One said, "We want him to have a deep-seated interest in teaching." Another, looking toward integration of courses, would employ the person "who is not too narrow, who is tolerant, and who is familiar with other areas of learning." A dean felt that some of their best people in specialized courses were also the best general education teachers. He said, "If he has the time and patience and will try, the specialist will be a successful teacher of general courses."

The controversy which prevails among writers concerning the merits of specialization compared to general education training did not appear in the conversations of the Oklahoma college administrators. The principal reason for this omission was, of course, the fact that only those teachers with education in special areas were available at the time of the study. Their major problem, then, was to select those having attitudes most favorable to the philosophy and aims of general education and to continue their efforts to develop in those who were teaching a more favorable attitude toward the movement.

#### Teacher Remuneration

Question 96 concerns salaries of teachers of general education.

Beginning with an explanation of why it has been included as one of those used in the interview, it reads, "Review of data on rating and salary of faculty members indicates an inequality between those teaching at the lower college level where general education predominates and the upper college level. By contrast, literature relating to the general education staff agrees that the person should have a broad preparation and unusual teaching ability. Is the general education staff member in your school recognized for his preparation even though it may not conform to the standard pattern of specialization and degree?"

As has been pointed out, the teachers of general education in the Oklahoma State Colleges were drawn from the regular faculty; therefore, there would be no differences in salaries because of assignments to general education courses. However, the writers do deal with this matter because, on a nationwide scale, there exists a possibility that the general education person with no academic home will fail to receive salary increases commensurate with his contemporaries. Or, as one writer points out, ". . . if the program wilts he is in an unenviable position. He is a teacher without portfolio, and one fears, soon without wallet."<sup>8</sup>

Wynne, on the other hand, thinks of the general education program as a permanent part of the college curriculum. He expresses the opinion that faculty members should be encouraged to specialize in general education by giving them both recognition and compensation. In this connection he points out that "administrators can do two things. . . . they can pay better salaries to capable instructors who are willing to devote their

<sup>8</sup> Pooley, op. cit., p. 4.

efforts primarily to general education." And, "The best teachers . . . should be assigned to the lowerclassmen, especially in courses designed to provide general education."<sup>9</sup>

In further discussion he bases this contention on the fact that students in their first two years of college are more difficult to teach, more so because they are not in their specialized fields.

Another writer points out the unfairness of basing salary increases on research and writing, with rewards for teaching ability being slighted. Observing that some institutions have already made progress in righting this situation, he says, "In these institutions teachers can rise to the top brackets of rank and salary as a reward for the excellence of their teaching in the general education program."<sup>10</sup>

Among these writers there is no dissension concerning the propriety of paying an equal, if not more than equal, salary to the general education staff. They recognize, rather, that the monetary compensation will be proportional to the academic status accorded them.

#### Relative Merits of Teacher Traits

In order to pinpoint the desirable qualities a general education teacher should have to be successful, question 101 was directed to all those on the list to be interviewed. It asks, "Which plays the greater part in successful teaching of general education subjects: knowledge of

<sup>9</sup> John P. Wynne, General Education in Theory and Practice (New York: Bookman Associates, 1952), p. 217.

<sup>10</sup> W. Hugh Stickler, "Summary and Persistent Problems," General Education: A University Program in Action, eds. W. Hugh Stickler, James Paul Stoakes, and Louis Shores (Dubuque: Wm. C. Brown Co., 1950), p. 430.

subject matter, methods of teaching used, or enthusiasm and belief in the principles of general education?" Teachers and administrators were both asked so that a broader view on the two levels could be acquired for comparison. Many divergent viewpoints were discovered among the interviewees as well as among writers in the field.

One writer would dispel the old belief that a good scholar will necessarily become a good teacher even though he has had no preparation or training as a teacher. He says, ". . . it is certainly time for the prospective college teacher to learn his job today is far more than that of being a scholar."<sup>11</sup> Also, pointing out the need for a better command of methods, he adds, ". . . knowledge of subject matter, however erudite, is insufficient."<sup>12</sup> For the student who does not see the purpose of general education, who may even be hostile to it, something more is needed. Hawley says:

Here the techniques of teaching becomes as important as the content of the curriculum. Here the personality and the training and enthusiasm and all of the other attributes of a truly good teacher must come to the fore.<sup>13</sup>

Another study places equal emphasis on the values of methods and contents in teaching general education courses, while still another writer would select general education teachers from those who have an understanding of the aims and objectives of the program. An inclusive statement he

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<sup>11</sup>Sidney J. French (ed.), Accent on Teaching—Experiments in General Education (New York: Harper and Brothers, 1954), p. 4.

<sup>12</sup>Ibid.

<sup>13</sup>Claude E. Hawley, Curriculum Problems in General Education, A speech to The Conference on Higher Education, The University of Oklahoma, Norman, Oklahoma, March 27, 1950, p. 7 (mimeographed, personal copy).

makes on this is, "One of the most important requirements is that the teacher should be sensitive to the needs of students as human beings."<sup>14</sup>

Most of the administrators of the six Oklahoma State Colleges stressed attitudes toward the general education program more than knowledge of subject matter. A dean clarified this when he said, "We assume that completion of his graduate work is proof of his background in subject matter, what we look for in a general education teacher, then, is enthusiasm and belief in the program." A dean from another college agreed, placing "enthusiasm as number one" and adding, "of course, the method and subject matter are important too." Still another dean considered subject matter, methods, and enthusiasm all important, but said that "belief in the principle of general education is the most important."

Two presidents merely stated that all of these things are important, meaning subject matter, methods, and enthusiasm and a clear concept of the aims of the program were all important. Another, however, took a definite view that differs from the others. He said, "Knowledge of subject matter is the most important," elaborating on this by adding, "I don't believe one can teach anything if he doesn't know it." It is very probable that he was thinking in terms of degree requirements while the others had assumed that all applicants for teaching positions would be qualified in terms of majors and minors before being selected for teachers.

Of the science teachers in Oklahoma colleges, fourteen of those

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<sup>14</sup>H. T. Morse and Russell M. Cooper, "Problems of Implementing Programs of General Education," General Education in Transition—A Look Ahead, ed. H. T. Morse (Minneapolis: The University of Minnesota Press, 1951), p. 297.

interviewed thought subject matter is more important than methods or enthusiasm and belief in the general education program. Each one, however, expressed the belief that the other two qualities support a good background in the subject. One made a typical statement when he said, "One could be the most enthusiastic person in the world, but if he did not know what to teach, he would not be able to teach." Such a statement as this is based upon the assumption that teachers are placed in their position without regard to subject matter qualifications—a situation which does not exist in our colleges.

On the other hand, nine teachers thought enthusiasm was the first prerequisite for a good general education teacher. One made a statement almost completely antithetic to the one who put subject matter first. He said, "Though we had all the knowledge in the world, if we do not have the ability to get it across we are just failures." Another gave his personal philosophy, saying, "If one is enthusiastic he can at least keep the students' interest and maybe they would correct him if he said something wrong." One person first listed "methods" as the most important, then added that belief in the program was necessary before methods could be effective.

Though almost every teacher said subject matter, methods, and enthusiasm are all necessary, five refused to make any attempt to select the order of importance. As one teacher stated, "It is just like asking which link in a chain is most important."

#### Efforts toward Improvement of Instruction

Question 100, "What is being done to improve the teaching staff

as teachers of science in general education?" was asked of the administrative group and so does not consider the problem as seen by the entire staff or by the individual teacher. These aspects are covered in some detail later in this chapter.

Six made no reply to this question, with another saying nothing was being done to improve the general education staff in science, or as another remarked, "Nothing definite." Five others said their science staff members were encouraged to attend school. In one instance the use of sabbatical leaves for advanced study was mentioned, and another said that they were encouraged to take a variety of related courses when attending school. Two took the attitude that their staff members for the most part held doctor's degrees and therefore needed no improvement.

Six also mentioned that their teachers of science in general education were encouraged to attend conferences, workshops, and professional meetings as an aid to self-improvement as instructors. In one college the science teachers were asked to rewrite their course of study each year in order that "they might keep the subject matter taught up-to-date."

### Attitudes toward General Education

#### Opinions of the Teachers

Though this part of the paper is devoted to analyzing the attitude toward the general education program in the Oklahoma State Colleges, the position of instructors will become clearer if we first look to the writers in the field for opinions of teachers in other places. One writer begins with a rather pessimistic view of the situation:

Negative attitudes and tactics will be encountered. . . . Some



faculty members will not understand; others will have closed minds. There will be unenlightened self-interest, prejudice, dogmatism, and a preference for the routine. Teachers of specialized subjects will have vested interests and there will be efforts at "empire building." There will be demands for "recruiting" courses, production of suitable teaching materials in general education will lag, and other difficulties will have to be faced.<sup>15</sup>

Departmentalization and specialization are repeatedly pointed to by writers who fear that these concepts will take priority over student needs as set forth in the objectives and philosophy of general education. A possibility exists that the department will be so concerned with its own growth or survival that the education of the student will pale in comparison. As one writer says of such a department, "Its interests are centered on subject matter, not on the needs of the students, and it grows in strength by adding more specialized subject matter calling for more specialists."<sup>16</sup>

These cycles, always leading back to the emphasis on specialization, in all probability form one of the underlying reasons for the seemingly greater prestige being accorded the specialist as compared with the teacher of general education courses. Although no such statement was given by any of the science teachers in the Oklahoma colleges who are assigned to teach in the general education program, there is a strong possibility that this philosophy was behind some of their objections to teaching the general courses.

Rather than a direct question concerning antagonism toward the program, the teachers of science in general education were asked question

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<sup>15</sup>Stickler, op. cit., p. 423.

<sup>16</sup>French, op. cit., pp. 6-7.

sixteen, "Would you, given a choice, elect as all or a part of your teaching load to teach general education subjects?" In this manner it was hoped they would feel more freedom to express their views without committing themselves to an admission of either antagonism or indifference. Of those interviewed, thirteen said they would not elect to teach a general education course, seven answered in the affirmative, while twelve others gave qualified statements, showing they would be willing to do their share.

Eight of those who would rather not teach a general course gave an unqualified, "No." One showed some indifference when he said, "It does not matter too much, but I would rather specialize." Three others based their opposition on the lack of background in all of the fields of science covered in a general education course. Only one gave as a reason the belief that it was easier to teach in only his special field. He said it is easier because "there is no jumping back and forth from a high level to a low level as there is when you try to teach both kinds of courses." From the pedagogical viewpoint it requires a higher level of instruction to accomplish the goals of general education in science than is necessary to teach methods of problem solving as found in many high level courses.

Those taking the opposite view and stating they preferred to teach some general education courses, for the most part, merely said they "enjoyed" teaching the general education students. One added that it gave him an opportunity to associate with a larger part of the student body. Another expressed the personal opinion that it was a challenge to cover so many fields of science.

Of the twelve who answered that they were willing to teach some general education courses, most took the position of willing cooperativeness in accepting the requirement of the school system that specialists do some teaching in the general courses. Each of these teachers added the qualification that, though they were willing to do their share, they would not be willing to teach only the general courses.

#### The Administrative View of the Staff

A rather surprising discovery was the fact that the administrative personnel of these schools apparently did not have a clear picture of the attitudes of their teachers concerning the general education program if those interviewed in science are any indication of the total faculty. Questions 20, 21, 23, 24, 25, and 26 seek opinions from administrators concerning support of the program by the staff: "Do you feel that you have the support of your faculty (or staff) for your program of general education?" "To what degree would you estimate your faculty supports the program?" "What percent, if any, of the staff are antagonistic to the program?" "What percent, if any, are indifferent?" "Do you consider this significant opposition?" "Is there any opposition to the general education courses from teachers of science?"

It seems likely that those who stated they specifically would not elect to teach a general education course if they had a choice must feel some degree of indifference if not outright antagonism. Even those who were willing to do their share in the program were only showing a tendency toward cooperation that is far from enthusiasm for their assignment. In one college, for instance, both the dean and the president stated there

was "no antagonism and little indifference." The dean was more specific when he said, "About ninety percent of our teachers are in sympathy with the program and less than five percent are indifferent." Yet in that same school, three teachers, out of the five interviewed, said they would rather not teach general education courses, while another merely said, "We all cooperate."

Other Oklahoma colleges showed much the same pattern. One, however, differed in that even the dean admitted that approximately half the faculty was antagonistic and the other half indifferent. A chairman at that school said, "I believe the science teachers, especially, are opposed to the general education courses." The percentages given by the dean were carried out in the science department, at least, where three said they would not elect the general courses and three were willing to teach a part of them.

#### The Role of the Departmental Chairman

To get a broader view of all those concerned with the general education program in the Oklahoma colleges, a question was directed to the deans and presidents that would indicate the position of the department heads in the over-all program. Question 27 asks, "Are the departmental heads, or chairmen, lagging or leading the faculty in the conduct of the general education program?" Because this is an individual matter and pertains only to the Oklahoma institutions, no attempt at comparison with the writers will be made here.

It needs to be emphasized that this question was not limited to the science departments. Since the emphasis of the interview was on

science, there may be some tendency to think of chairmen of science departments only in making reply to the question; other than that, it does not indicate any condition existing in the supervision of science in general education alone.

The deans of three schools stated that the departmental chairmen were leaders in the general education program. There were, however, varying degrees of emphasis. One said his chairmen were "definitely leading," another said they were "attempting to lead." Pointing out the diversity of attitudes, another said, "Most of them are leading; however, some of them are leading the lagging!"

The other three deans interviewed all said that the departmental chairmen were lagging. One explained that it was a natural reaction because the chairman was normally a specialist of the highest order. The other two offered no reasons but stated that many of the faculty members were far ahead of the chairmen in developing a favorable philosophy toward general education.

The presidents of the schools were less specific in segregating the chairmen who lead from those less strong. Two said they thought they were leading; another said, "Some are more aggressive than others"; and yet another, "I have certainly not heard about any of them not being receptive to the program." One gave a more concrete view, stating that they were leading because each had served as chairman of the general education committee, an indication within itself of interest and leadership. From their meetings, then, ideas were handed down to the teachers, making the department heads actual leaders.

### Outstanding Teachers in the Program

In order to discover those teachers who were doing outstanding work in planning, organizing, and conducting programs in general education, questions numbered 28, 29, and 30 were directed to the administrators. They ask, "How many individual teachers do you estimate are doing outstanding work in the planning, organization, and conduct of the program?" "In what departments will these persons be found?" "In what way is their work outstanding?" Many references have been used in previous sections relating to the necessary qualities of general education teachers. But, as others say, ". . . recurring observations . . . suggest that the quality of instruction in general education must receive attention."<sup>17</sup>

The purpose here was to pinpoint only the few who are doing outstanding work as teachers of general education, yet many of those interviewed avoided the issue by treating the word "outstanding" in a much broader sense than the interviewer had in mind. A dean listed all of those teaching general education courses. Two others said "about half" were outstanding, and still another would select the entire faculty, "even those not teaching general education." A chairman designated all of the science department staff as outstanding in general education work. Such all-inclusive statements are a reflection of loyalty to staff rather than a considered answer to the question.

On the other hand, a president and a chairman at different schools said that relatively few were outstanding. Two other administrators, a

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<sup>17</sup>Paul L. Dressel and Lewis B. Mayhew, Directors, General Education: Explorations in Evaluation (Washington, D.C.: American Council on Education, 1954), p. 256.

dean and a chairman, said "None." One of these explained that there was too little time for planning. A dean from another school said, "A majority of the teachers are offering the general education courses as if they were prerequisites for advanced study in a particular field." By this these teachers showed a lack of sympathy for the objectives of general education. It follows, then, that the instruction, viewed in the light of general education goals, could not be meeting the aims.

At least three administrators, however, had given more thought to the matter, designating from three to fifteen teachers as actually outstanding in the work. One said of these, "They are really proponents of general education, even to the extent of trying to win converts to the program." A president was more specific when he said the three or four in his school who were doing outstanding work in general education were offering practical application and teaching appreciation of the arts. Another president named those who "spend more time with the students, take a greater interest in the activities of all departments, and take part in community affairs."

If any one area received greater recognition by the presidents and deans than another for doing superior work, it was the humanities. Each of the administrators who named specific teachers included some one from this area. There is a possibility that this occurred because the humanities courses, by nature, lend themselves to the development of the student along the lines established by the goals of general education. In fact, for some, the mere mention of general education suggests the humanities.

It was the intention that some analysis of why teachers were outstanding could be made from these replies and that a comparison of areas

having outstanding teachers might develop. Information was insufficient, however, for making any strong conclusions on this point.

### General Education versus Liberal Education

Because the general education courses in science in the six Oklahoma colleges are an outgrowth of the older liberal arts program, the teachers were asked for an opinion on the relative value of the two. Question seventeen asks, "As a teacher of your specialty, do you feel that standard liberal arts prerequisite and beginning courses would have contributed as much to general education as the general science courses which take their place?" Many of the writers have also given thought to the matter, most of them being definitely in favor of the general education courses. One group points out one of the major reasons for the newer concept:

Liberal arts colleges have been so preoccupied with the training of psychologists, chemists, and musicians, that they have neglected the education of the free man. They have not realized, as Montaigne did, "that the object of education is to make not a scholar, but a man." It is with the latter that general education is concerned. For this reason the substitution of the word general for liberal is justified if it focuses the attention of educators on the urgent need for a restoration of those human values which have been gradually lost sight of in the planning of the past half century, when specialization has been the order of the day.<sup>18</sup>

Another reason for the transition from the liberal to the general education, according to Wynne, was the trend toward "the collection of a patchwork of credits"<sup>19</sup> as a result of the free elective system. He points out, however, that even though this system was modified somewhat, it still

<sup>18</sup>Earl J. McGrath et al., Toward General Education (New York: The Macmillan Company, 1948), p. 11.

<sup>19</sup>Wynne, op. cit., p. 19.



left only specialized courses. He says, "Few, if any, courses were available in any subject that met the needs of non-specialists."<sup>20</sup> This brings back, again, the question of a few special courses or the general courses.

Bringing up another facet to the problem are those specialists in science who would promote a modified course in their own area to meet the objectives of general education. One writer says:

All of us know some great teachers who are vigorous defenders of the use of a single science discipline as the most suitable means of achieving General Education objectives in the sciences.

.....  
At best such courses approach the problem backward—the modification of a discipline to make it more palatable to the nontechnically minded. It is too often a watered-down course which can be quickly shed by our typically well-waterproofed students.<sup>21</sup>

It can be stated neither too often nor too forcefully that a proper general education course should not be of lower standards than any other. The science teachers in the Oklahoma colleges were not in agreement on the relative worth of liberal and general education. It is not surprising, if one keeps in mind the number who would not elect to teach a general education subject, that many prefer the older method of requiring beginning courses in specialized areas to the general courses. A tabulation of the responses shows that eleven would rate general courses first, nine place more value on the liberal program, and six are unsure.

Most of the teachers who favored general education did not elaborate on their answers, merely saying that general education was better. Those who did, however, based their answers on two basic points. First,

<sup>20</sup>Ibid., p. 20.

<sup>21</sup>Sidney J. French, "General Education and Special Education in the Sciences," General Education in Science, eds. I. Bernard Cohen and Fletcher G. Watson (Cambridge: Harvard University Press, 1952), pp. 20-21.

they recognized that more areas could be covered in less time by the general courses; and second, they felt the nontechnical student was better served in this manner.

Of the nine who thought the liberal method was better, only three gave reasons for this belief. One said, "A small amount of information well mastered is far superior to a large amount not well mastered." Another answered much the same, saying, "The survey courses give the student a very limited knowledge about anything." His answer immediately shows a lack of understanding of the principles of the program, since the aims of general education have excluded the survey courses. The third based his answer on the fact that the prerequisite courses were more valuable because of the laboratory work involved, a point on which most biology teachers strongly concur. The group of six who made no distinction between the contribution of liberal and general education apparently failed to realize the difference. Of these one made a typical statement when he said, "It is the same thing with a new name."

#### Programs Leading to Improvement

Because most of the teaching personnel of the general education program are drawn from departments of specialization, the college must often provide the necessary transition by in-service training of faculty members. A writer points out possible methods of accomplishing this: "Every college would profit from close cooperation with neighboring institutions, from organizations of intercollege committees to work on common programs, from the exchange of personnel records, course syllabi, and

printed forms."<sup>22</sup>

Another cites the importance of current literature on general education. He says, "The growing volume of theoretical and practical literature . . . must be made readily available, and the staff stimulated to read, discuss, adapt, and apply relevant ideas and processes."<sup>23</sup> Here, again, is an attempt to adapt the specialist to the general program.

The same author also recognizes the value of intervisitation and conferences when he states that opportunities should be provided for the instructor in general education "to visit other institutions and attend local, state, and national conferences in order to see general education in action."<sup>24</sup>

Wynne takes the attitude that a committee for improvement of the general education program cannot announce its findings and plans toward improvement with any expectation that the individual instructor will accept and adopt the change. These studies can serve, however, to direct the attention of the faculty on the particular practice that needs improvement. He says:

When every department and every individual is free to attack the problem in his own way, and when intercommunication between individuals and groups is established, eventually some general unifying undertaking will emerge in which the whole staff will become interested and participate effectively.<sup>25</sup>

<sup>22</sup>Ralph W. Tyler, Director, Cooperation in General Education: A Final Report of the Executive Committee of the Cooperative Study in General Education (Washington, D.C.: American Council on Education, 1947), p. 220.

<sup>23</sup>B. Lamar Johnson, General Education in Action (Washington, D.C.: American Council on Education, 1952), p. 383.

<sup>24</sup>Ibid.

<sup>25</sup>Wynne, op. cit., p. 168.

### Instruction of the Staff

Several questions were directed to the administrators and faculty of the institutions concerning attempts to better acquaint the teachers with the aims and philosophy of general education. Question 57 asks, "Is there any program in the school to acquaint the faculty as a whole with the general education program? Discussion at faculty meetings? Group studies? Suggested readings? Others?" Following this, number 58 questions, "Has there been any such program in the past?"

If such programs were in existence, further questioning sought to discover what types were effective and what their contributions had been. Questions numbered 59 through 63 were directed to the deans and chairmen for this. In order, they ask, "Is any program under way which may lead to the improvement of instruction in general education such as: Study groups? Committees? Individual Studies?" "What are the groups so engaged?" "What has been their contribution?" "Is there a record of their work?" "Is this record available?"

Number 64 questioned the presidents, deans, and chairmen concerning individual studies. It asks, "Have any teachers as a part of their personal development pursued individual studies to better equip them as teachers of general education?" The presidents and deans were next asked question 66, "Other than means indicated in answer to previous questions, is there any organized system for inculcating the attitude of mind necessary for teaching general education subjects to those departmental teachers (specialists) assigned to general education classes?"

The administrators all stated that there were committees or study groups for the entire school curriculum with general education being

included. These groups then report their findings to the faculty. None gave a specific program for the study of general education. A chairman said their college "used to have study groups for general education years ago before it became the popular thing." A dean of that same school said, "We discussed it at a few faculty meetings when it was new, but now we just take it for granted."

A president pointed out one means by which some of the teachers became better acquainted with general education. He said, "The advisers have to know a great deal about it; they cannot advise the students unless they understand general education." A dean of another college said much the same thing and added that "the heads of the departments have to know something about it, too."

The question concerning the contribution of any program leading to the improvement of instruction brought forth only two concrete answers. A chairman said they had "a few reports" on general education from the curriculum committee. A dean said the work of the curriculum committee had resulted in "plenty of cooperation from the teachers and better integration between subjects." There were, however, duplicated committee reports from most of the schools which, if read by the individual faculty members, should have had instructional value with respect to the aims of the program, and two, perhaps three, of these were well enough prepared to have inspirational value.

In addition to this, each institution in preparing for inspection leading to approval of their teacher training program were required to review the general education phase of teacher certification rather thoroughly and objectively.

### Meetings between Departments

Interdepartmental meetings of general education teachers are often cited by those who have studied the program as a means to insure that the broad goals of general education are being reached. For this reason, the administrators of the six Oklahoma colleges were asked in question 65, "Are there interdepartmental meetings of general education teachers?" Most of those answering said, "No." One, a dean, reluctantly said, "I'm afraid not." A president said he had encouraged it, but knew of no formal meetings for this purpose. A dean from another school said that any such meeting was "only incidental."

### Personal Attempts for Improvement

Each teacher interviewed was asked in question 67, "Have you as a part of your personal development pursued any individual studies to better equip yourself as a teacher of general education? Please outline the kind and extent of work." Because several writers were quoted previously showing how the individual could achieve a better understanding through self-study, no repetition of those references will be made here.

Twenty-one of the Oklahoma teachers listed their efforts in reading. The sources from which they read varied from books on general education, to the newspapers, to periodicals in their specialized field. Other reading matter listed was the National Education Association Journal, the packets sent out by the North Central Association, and current magazines. One showed a lack of enthusiasm when he said, "I've read some books, but they have not done me much good." Another reported reading many articles in current publication, saying, "We have not been asleep at

the switch." Two teachers showed greater efforts. One had "read twenty or twenty-five books, compiled a bibliography, and integrated this material into the class work." Another had studied the program thoroughly and had written papers on general education. One sounded a discouraging note for the aims of the program when he stated, "I just read technical journals. I am not too concerned with classroom techniques and procedures."

Another means by which the teachers prepared themselves for teaching general education was the study in courses outside their major field. Although all of these teachers were specialists in some area of science, one had taken psychology and vocational guidance courses for personal improvement. Three had taken extra courses in various areas of science to aid their handling of the general courses. Another had taken an audio-visual course. Two had taken graduate work in general education courses while one planned to study in this field during the summer.

Two believed that their experience in high school teaching had developed a better understanding of general education. Another had studied methods in his preparation for teaching. One spent his summers working at the Biological Station at Lake Texhoma, gaining practical information for use in the classroom. Another showed good intentions when he said, "I just work hard and do the best I can."

#### Improvement through Intervisitation and Observation

Several writers have stressed the need for cooperation in developing the general education program. Questions were therefore designed to ascertain the degree of intervisitation within the department, between

departments, and with other colleges. A writer points out a definite need when he states, "Colleges must learn the possibility and desirability of collaborating with each other to improve American collegiate education."<sup>26</sup> A junior college encourages its teachers to visit other schools:

At times administrators arrange for instructors to visit other colleges when particular investigations are being made or are in prospect. . . . Under this plan individual instructors or groups of them may arrange for intervisitation on the basis of their particular interests and concerns.<sup>27</sup>

Relating the benefits from cooperative action within the science department, another writer states, "If adequate communication and rapport exists between the staffs of general education and departmental science courses, a very useful effect may be observed at the faculty level."<sup>28</sup> He recognizes the benefit of this interaction both to general education and to the specialized courses in science.

A writer who proposes cooperative effort as a means toward better education says, "Administrators, supervisors, teachers of different subjects, and laymen, too, will with increasing frequency get together to work out solutions to educational problems."<sup>29</sup>

The questions used here were 68 and 69: "Has any provision been made for teacher growth through intervisitation and observation of instruction? Within the department? Within the college? With other col-

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<sup>26</sup>Tyler, op. cit., p. 51.

<sup>27</sup>B. Lamar Johnson, op. cit., p. 312.

<sup>28</sup>Gerald Holton, "Harvard University," College and University Bulletin, IX (February - March, 1957), 2.

<sup>29</sup>Robert H. Carleton, "Science Teaching and Education Aims Today," The Phi Delta Kappan, XXXIII (October, 1951), 100.



leges?" "From the standpoint of the administration (or teacher) would a program of intervisitation be desirable?"

In the six Oklahoma colleges surveyed for this study, none had a planned program for intervisitation either within the school or between schools. There was a sharp division between those who thought such a program would be advisable and those who would object. A tabulation of presidents, deans, and teachers who discussed the desirability of an intervisitation program shows that sixteen were in favor of it, eleven were opposed, and six gave a qualified "maybe." Those who favored the proposal varied from an emphatic, "Yes!" to those who thought it "might" be a good thing. Three administrators answered favorably but expressed the fear that instructors would not cooperate. Two cited instances when the teachers had visited high school science classes as the reason for favoring intervisitation. One said, "Our eyes were really opened." There was no further comment on this, so we do not know the kind of eye-opening experience they had.

Those who opposed intervisitation gave various reasons for this opinion. One said, "It is out of date; I just do not believe in it." Another said, "It would smack of Gestapo tactics, and some would feel abused by it." A chairman based his objection on the feeling that "Some teachers can be brutally critical, and others are somewhat sensitive." He feared dissension among faculty members. A teacher epitomized the feeling of several when he said, "I surely do not want someone watching me teach!"

The presidents and deans were asked in question 70, "Do you see any insurmountable problems in establishing or developing a program of teacher growth through intervisitation within the school? With other

institutions such as other state colleges?" Question 71 was extended to the teachers, asking, "Would the benefits probably justify such a program?" Most of them gave "lack of time" as the main obstacle. One said, "We have just about reached the saturation point in things that take us out of class." Another explained, "Our people have too much to do already." The matter of expense was also mentioned, a president saying that it was not included in the budget.

Attitudes of teachers were also given as an obstacle to promoting the intervisitation program. A dean said, "We would first have to sell the faculty on the idea so one teacher would not feel the other was snooping around." Another dean mentioned "lethargy and lack of stimulation." A chairman summed up the feeling of several when he said, "We are just too busy!" At another point the observation was made that the administration might not have known the attitudes of their teachers and what was taking place in the classroom. However, their replies in this particular section indicated that they may have been quite astute while they, for the most part, presented their institution and staff in the best light possible. They are to be commended for this type of loyalty.

#### Departmental Planning for the Program

The stage is set for this discussion by a quotation from Wynne, who says:

General education is not only a function of the college as a whole; it is also a function of all divisions, all departments, and all instructors. Whether the primary emphasis of a department is general education, specialized education, or professional education, it does, as a matter of fact, influence general education. The administrators of such divisions and departments are under obligation consciously and deliberately to provide conditions that are most conducive to the

realization of the ends of desirable general education.<sup>30</sup>

Another writer, pointing out the need for closer cooperation between general education teachers and the other members of the department says, "A policy of close liason with the departments tends to give these departments and, indeed, the faculty as a whole, a certain stake in the general education enterprise."<sup>31</sup>

Because of the emphasis by these and other writers on the need for departmental and interdepartmental planning in facilitating a general education program, a question was formulated to discern the amount of time given to such activity in the Oklahoma State Colleges. Question 72 asks, "What part of the time of the teaching staff is given to departmental and interdepartmental planning?" The deans, chairmen, and teachers were asked for this information.

In one school, the dean hesitated to give an estimate of the time spent in planning, but said that it was "enough." A different view came from the chairman of the science division in that same school who felt that not enough time was given to planning. Teachers in that college all said there were no formal meetings, just informal discussions. In the second school there was agreement between the dean and chairman, both estimating about five percent of each teacher's time was spent in conferences or planning. Teachers in the same school declined to give exact time, one saying, "We plan during our coffee break."

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<sup>30</sup>Wynne, op. cit., pp. 215-18.

<sup>31</sup>David Owen, "General Education at Harvard University," Organization and Administration of General Education, ed. W. Hugh Stickler (Dubuque: Wm. C. Brown Co., 1951), p. 294.

Another college surveyed yielded four answers which said that "not enough time is spent in departmental planning." Three in that school, however, considered their personal preparation for class work as departmental planning. One said, "I spend all my time in departmental planning." The other two said that it was "a continuous thing of informal discussion and consultation to prepare for the general education courses."

Formal departmental meetings were held for one hour each week, according to the chairman of the science division in another school. These meetings covered any area of the science field, including the general courses. Examinations were also planned at these meetings. The other two colleges had no formal meetings, either in the department or between departments. All answered that no time at all was given to planning or that it was incidental "over coffee."

#### Coordinator for General Education

Any endeavor that justifies the use of the term "program" must have some organization, some link between the parts before it can become a whole. Left to their own devices, many faculty members are likely to revert to teaching general education courses as an introduction to specialized areas with little concern for meeting the objectives of general education. As was previously shown by the number of Oklahoma teachers who preferred not to teach the general courses, many, if not encouraged by organization and study, would fail to understand the philosophy of general education and soon escape its influence entirely. The questions relating to this were eighteen and nineteen, which ask, "Is there in our state colleges a need for a dean or other administrative head of the

general education program?" and "Do you feel that our state colleges are large enough to justify such a person?"

A writer points out the need for an individual with the enthusiasm and authority to conduct such a program:

It is important that there be such a coordinator; the existence of separate, independent courses does not constitute a program. There must be commonality of interest among these people who are involved in offering general education courses. They must have some commonality of thinking about general education and they must be aware of and concerned about what is being done in all general education courses. . . . The program coordinator must have sufficient power to say who is going to teach and who is not going to teach, and to reward appropriately those who do an outstanding job.<sup>32</sup>

Another writer recognized the need for delegated responsibility to facilitate organization. He says, "When responsibilities are not assigned, courses may be outlined as specialized instruction, instructors may teach as they were taught in their university specialties. . . ." <sup>33</sup> He also expresses the belief that, once the assignments for responsibility are made, the administration should hold "accountable those to whom responsibility has been assigned."<sup>34</sup>

Another writer, realizing the great difference between the specialized department, general education needs, and the tendency for departments to focus attention on their specialized area, points out the need for a general education division. He says, "The committee believes that a division of general studies or a general college or some other form of

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<sup>32</sup>Paul L. Dressel, "Practices that Indicate a Functioning Program of General Education," Effective Practices in a Program of General Education, ed. Lucy Kangley (Dubuque: Wm. C. Brown Co., 1954), pp. 92-93.

<sup>33</sup>Leighton H. Johnson, op. cit., p. 7.

<sup>34</sup>Ibid.

separate organization should be provided for general education."<sup>35</sup>

In complete opposition to the writers who would make special provision for the administration of the general education program are the presidents and deans of the Oklahoma colleges. Without exception, the twelve top administrators of the six Oklahoma colleges voiced an opinion against a coordinator or dean for the state colleges. Eleven of those based answers on the belief that the colleges concerned are not large enough to justify such a person. Only one said there was possibly a need for some organizing body, but that "one person would not be sufficient." His point was that a committee of from three to five people from the various departments to act as coordinators for a short period would be more effective because "it would prevent one field from getting more emphasis than any other."

At the present time, the dean of instruction is in charge of the entire curriculum in these colleges. And, since the questions designed to elicit an opinion on the possibility of a need for a coordinator were asked only of the dean and president of each college, there is a possibility that the position of these administrators could have been reflected in their answers. The presidents may have hesitated to suggest a change, feeling that such an answer would imply that their dean was not able to handle his present duties. The deans were in an awkward position to answer because each probably felt he was doing an acceptable job.

These are merely speculations. However, from the interviews with teachers, there is plainly a need for more understanding, coordination,

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<sup>35</sup>Tyler, op. cit., pp. 216-17.

and integration of the programs in the six Oklahoma State Colleges if the aims of general education are to be attained. This leaves two conjectures: either the administrators are not aware that these needs exist or they are not willing to admit that the program of general education is important enough to merit the planning and organization required to reach its goals. An inconsistency presents itself when these answers are compared to those concerning intervisitation, a specific means of improving instruction and understanding. Nearly all were in favor of such a program, but were in turn opposed to the coordinator who could be an effective instrument through which a program of in-service study and improvement might function.

#### Position of the Teacher in Relation to the Program

Previous sections of this chapter have considered the problem of finding teachers with a broad training, and having a philosophy acceptable to general education or the re-training of those drawn from areas of specialization. Suggestions were given whereby the teacher could improve his instruction, but the problem of time and facilities for further development is yet to be considered. In view of the increasing enrollment of today, it is important to know how much the teacher is already doing before he can be asked to accomplish more.

#### Teaching Load

Johnson points out the need for planning and study toward improvement of the program in general education, but he also recognizes the limitations placed upon the teachers' time:

Building new courses, planning new procedures, and developing new

materials require a good deal of time and energy. Teachers already heavily loaded find it difficult, if not impossible, to take the time necessary for developing new courses or for making extensive revisions in present ones.<sup>36</sup>

Students enrolled in general courses are likely to resent the over-crowded classrooms. In one survey, "Students indicated that their general education classes were usually larger than other classes and felt that this was a source of many of the weaknesses."<sup>37</sup>

All of those on the interview list were asked question 102 which reads, "Is the teaching load of the general science teacher (in college hours) in line with that of other staff members?" These people, it should be remembered, also teach courses in special areas. With but a single exception they felt the loads were comparable to those of other areas. Four commented that the laboratory hours took a little more time. One of these, however, stated that "laboratory hours take up a lot of time, but other teachers have papers to grade, so it about evens up." Though no wide deviation in teacher load was apparent, one teacher of the general courses said, "My load is two and one half times as much as the load of the average faculty member." Further questioning left the interviewer with the opinion that the extra time was self-imposed. This teacher was a sincere person and undoubtedly doing a splendid job for general education. But, to point out how much work he was putting into one course, he said, "If I had the energy, I would like for once in my life to teach just one four-hour course and teach it right."

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<sup>36</sup>B. Lamar Johnson, op. cit., p. 394.

<sup>37</sup>Paul L. Dressel, "Educators Confer on General Education," College and University Bulletin, VI (May, 1954), 3-4.



In response to question 105, "Are class sizes, for the teacher of general education subjects, in line with accepted standards?", most of the teachers indicated that their class sizes were larger than the 25 or 30 students generally accepted as the optimum size for such courses. One teacher said he had taught as many as 75 students in one class, another often had 60 or more. One person said his classes were "twice too large for best results." A chairman said, "These large classes are a handicap to general education." Others were more moderate in their comments; one stated that "they are a little heavy," and another said, "Some are too large for an ideal situation." All either said or implied that they could be more successful in teaching general education courses if they had smaller classes.

#### Available Time for Planning and Evaluating

Again and again the writers point out the necessity of planning, trying out new ideas, and frequent evaluation to improve the general education program. The question arises, then, in our present situation of increased enrollment, do these teachers actually have the amount of time required for adequate planning and evaluation? All interviewees were asked, "Is the load of the teacher such that he can give some time to planning, to improvement of instruction, evaluation and pioneering?"

This is question 103.

A reference which points out the difficulties in a program of evaluation says:

. . . attitude toward evaluation found among teachers recognizes the need for it, but feels that the exigencies of teaching make it impossible to do much about results. The size of classes, the teaching load, and the amount of material to be covered are cited as factors

which force the teacher into the use of formal and traditional instructional procedures which they may admit, probably are not particularly conducive to student development other than in factual knowledge.<sup>38</sup>

Thirteen of the individuals interviewed stated that they had enough time for attempts toward improvement, as indicated in the question. Some of these statements were modified, however. A dean said, "They have enough time if they make teaching an eight-hour-a-day job, but some teachers do not think it should be." Two teachers gave much the same answer, one saying, "There is adequate time if he puts in a full day." Another said that he had "to stay a while after school." One teacher said, "We have enough time, we just do not do it." A different view was taken by the teacher who said, "I just take time."

Twenty-five contrary statements were made by those individuals who felt they did not have sufficient time for planning, improving their courses, pioneering, or evaluating. Some made less positive remarks, such as "more time would be desirable." Others found no time for "research or pioneering" or extensive planning. A chairman says some of his teachers "are run ragged." A teacher said, "There are times when we are so rushed we can't think about anything."

The follow-up question, number 104, asked, "If not, is it anticipated that there will be more consideration of these problems in the future?" Only one person, a chairman, expressed a definite opinion that loads would eventually be lightened, giving the teacher more time for improving his courses. About half of those interviewed used the word "hope"

<sup>38</sup>Paul L. Dressel and Lewis B. Mayhew, Directors, General Education: Explorations in Evaluation (Washington, D.C.: American Council on Education, 1954), p. 26.

when speaking of the future. A chairman made an inclusive statement when he said, "We hope in the future more funds will be available to hire more teachers; it is the hope of all educators." Five persons were less optimistic. One stated he "could see no change." Six others believed the situation would "get worse."

The general science courses in the Oklahoma colleges were non-laboratory classes; therefore, those who answered question number 106, "Are physical facilities adequate?" were concerned with other problems. Four gave a plain "no" answer to the question; fourteen said, "Yes." The others formed a continuum between the two extremes. One said, "Our facilities are absolutely inadequate!"

Of those who pointed out special problems, two mentioned lack of space. Another saw the need for more film strips to use in general instruction. Still another said, "We have too many students at a time for the demonstration facilities to be adequate." A unique complaint was made by a teacher who said, "The acoustics in the building are not the best in the world." This will not seem trivial to those who have attempted to teach day after day in a room in which every sound reverberates until all words must be spoken against a continuous roar.

#### Summary

The teachers available for the general education courses in science are the specialists in the areas, some of whom have easily made the transition to general education. The numbers were about evenly divided between the teachers who would choose to teach some general education courses and those who would not, with an equal number being undecided. Adminis-

trative personnel seem not to be wholly aware of the adverse attitudes which do prevail. There has been some effort to acquaint the teachers with the ideas and practice of general education through study groups which are quite effective for those who participate. Departmental meetings have been ineffective in this respect. Effort has been made on the part of some teachers to better acquaint themselves with the needs of the movement.

All of these point to the need for closer administration and organization with greater exchange of ideas between the institutions themselves. This should be done in spite of an indicated overload of the teacher.

## CHAPTER IX

### CURRICULUM, TEACHING AIDS, AND INTEGRATION

#### Curriculum

Webster defines curriculum as "The whole body of courses offered in an educational institution or by a department thereof." To offset any lengthy discussion of the various uses of the term, curriculum in this paper will mean, simply, a course of study covering the science required in the general education program as a part of the total curriculum.

#### Teacher Planning

Wynne is of the opinion that all teachers in a general education program should stress the same things. He says, "They should somehow get together. The ideal would be for them to emphasize the same qualities."<sup>1</sup> Another writer, speaking of the general education instructor, would agree that specific areas should be emphasized, but adds that "the effective teacher selects pertinent methods and materials, combining them into a pattern particularly suited to his own talents and objectives."<sup>2</sup>

These two writers serve to point out the need for cooperative

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<sup>1</sup>John P. Wynne, General Education in Theory and Practice (New York: Bookman Associates, 1952), pp. 100-101.

<sup>2</sup>Ruth E. Eckert, "The Teacher and Teaching Methods in General Education," Current Issues in Higher Education, 1952, ed. Francis H. Horn (Washington, D.C.: Association for Higher Education, 1952), p. 128.

planning in order that the objectives of general education may be met, yet allow for the individuality of the teacher. To determine just what procedure was used for curriculum planning in the Oklahoma colleges, the chairmen and teachers on the list of those to be interviewed were asked question 38: "Do teachers of science in general education hold conferences with each other to plan a curriculum?" In the following question, number 39, they were asked, "How is the material to be covered in a given course determined? By means of or according to: a syllabus? the teacher's option? the Dean of the College? the text book? the departmental chairman? a committee? shades and gradations of these?"

Eight persons on the list answered affirmatively on the question concerning conferences of the teachers of science. One of these added, "We constantly hold conferences in our office on mutual problems and possible solutions." Another said, "There is a good bit of that in the science department." Five others, all from biology departments, held conferences for this purpose. One of these added, "We have weekly conferences in the biology department, but not with the physical science people." Another discusses the purpose of such conferences. He said, "The three of us in biology get together with the text to decide what to cover and what extra material to use, such as slides, demonstrations, and films." Only one person mentioned conferences among the physical science people in general education. He said, "We get together at least twice a year."

Informal meetings or discussions were listed by six persons as the means by which planning for the courses was undertaken. Some chose to explain further. One said, "We decide things in a cooperative manner here instead of the dictatorial way, but we hold few formal conferences."

Another said, "We do our planning in the coffee shop or when we meet just passing across the campus."

Ten persons said they did not hold conferences with each other to plan curriculum. One said, "The teachers do not, but the departmental heads do." Another remarked, "There have been no such meetings in the two years I have been here." Two others seemed doubtful of the purpose of conferences and answered that they knew nothing of that sort of thing. Another says, "Most of that is done by the heads of the department, and I have very little to do with it."

In answers to the question regarding the means by which the course material was determined, it was discovered that each school was using texts that had been chosen by the teachers. Many teachers added other comments relative to the selection and organization of subject matter material. Twenty-three persons mentioned some degree of teacher option in this decision. "The teacher can decide what order of presentation to use and choose the method that seems the most logical," was the comment of one, while another said, "We stay rather close to the text, but we bring in different sections in which we are more specialized, setting up demonstrations for the other sections in these areas." Three teachers mentioned their opportunity to stress certain areas more than others; another said he was free to "draw upon his own experiences."

In one school a syllabus was being used by all members of the biology department. One said, "The syllabus is approved by the dean and is considered more important than the text." Another mentioned use of the syllabus, but added, "It is not rigid." In this same group, a teacher said, "The text is used when it will fit the syllabus."

All of these answers led to the conclusion that formal planning for a course of study in the general sciences did not exist. There was some exchange of ideas from normal day-by-day contacts, but the actual development of the course was most often the responsibility of the teacher.

### Sectioning and Course Arrangement

Following the discussion of the means by which course materials and methods were selected in the Oklahoma schools, an attempt was made to discover how the courses were arranged, how the students were placed in classes, and the prevailing opinions regarding how these arrangements should be made. Question 44 asks, "Should general science courses be organized to accommodate different ability levels of students?" Number 45 follows with the question, "In your school, is the same course offered to all ability levels of the students?"

The time at which these courses were given was also considered. Question 46 asks the teachers, "Are the general science courses being offered at the proper time or sequence in the school program of the student?" To carry this a step further, question 47 asked, "If no, what do you feel the proper time to be?" Question 48 is, "Should there be any specified sequence between general physical science and general biology?"

### Sectioning

The matter of sectioning classes according to the ability levels of the students is a problem that has received widespread attention in recent years. In the writings on general education in science there seem to be no definite conclusions which are based on studies of such experi-



ments. In other areas, however, sectioning is being done, especially in communications. Pooley says:

The forming of sections for various levels of ability is a practice common to the communications programs dealing with large numbers. A number of programs provide for three or four levels of ability by this means.<sup>3</sup>

Other writers skirt the actual sectioning idea, yet stress the need for special attention, both to the gifted student and to those in need of remedial instruction. One says:

Should there be differential treatment of the gifted? Should they be sectioned separately? For less qualified students, there is almost unanimous affirmative agreement. But for the gifted there is not the same unanimity.<sup>4</sup>

He goes on to suggest several solutions to this dilemma, the first of these being separate sectioning.

When this possibility of handling students of different abilities was suggested to the Oklahoma teachers, many of those interviewed thought immediately of the convenience to the instructor of sectioned classes. Others saw the advantages for the students; but, almost without exception, they pointed out the difficulties involved. A few were definitely against the idea. In none of the schools where the teachers were interviewed was there such a practice in effect.

One of those who saw an advantage for the teacher stated, "It would be easier and a lot more efficient if we could put them in sections,

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<sup>3</sup>Robert C. Pooley, "Communication Courses," Accent on Teaching—Experiments in General Education, ed. Sidney J. French (New York: Harper and Brothers, 1954), p. 118.

<sup>4</sup>The Reverend Charles E. Sheedy, C.S.C., "The Gifted Student," Current Issues in Higher Education, 1956: Resources for Higher Education, ed. G. Kerry Smith (Washington, D.C.: Association for Higher Education, 1956), p. 70.

but we don't seem to be able to do that so we just take them as they come and do the best we can with what we get." Seven more looked favorably toward this change, but mentioned problems. They used such statements as, "You can't do it in a small college," "A scheduling problem would arise," and "It would be nice, but too difficult to achieve." "Lack of man power" was a reason given by one, and another mentioned that it "gets too close to individual tutoring and is too expensive." He added, however, "If you can afford it, then go ahead."

Seven others liked the suggestion of sectioning students and made no remarks concerning the difficulties involved. One said, "There should either be different levels or at least more flexibility in the course." Another said, emphatically, "Any course needs sections for students of different ability levels." Yet another stated, "It would be more convenient as far as teaching is concerned, and I suppose it would even be more desirable for the student."

Taking the opposite view, six persons saw no need for sectioning students according to levels of ability. Some chose to explain their reasons. One replied, "If the course is doing what we want it to, it should do for almost any level of ability." Another talked at length on the necessity of requiring a certain standard for all students. He said, "I am not sure it is desirable for us to attempt to teach morons how to pass college courses." Much the same thought was expressed by another who feared that sectioning would lead to "watered-down courses." He concluded, "It is already watered down to the point where anyone not able to pass it should be excluded from college." Another argument from this same person was based on the belief that "they all live in the same world, and

if you soften it up for one, it would deter the average and above average."

Bringing in a different thought, one teacher was concerned with the psychological effect of sectioning on the students. He feared that the students with less ability would feel they were in the "dumb class." Another view taken by a teacher was that "anybody can benefit from the general education courses." He felt that any special sectioning for ability levels should come after the general education was finished. A hint of disgust with the background of his students was shown by one instructor when he remarked, "If we have to teach all the materials in college that should have been covered in high school or even down in the grades, we probably have as good a scheme as we can devise." Upholding the status quo, another teacher said, "We handle each class according to the general ability of the students in it, and the better they are the faster we can go."

#### Time and Sequence

Concerning the optimum time at which the general science courses should be offered, the respondents were almost unanimous in their agreement that the freshman and sophomore years were best suited for these classes. Three thought that it made little difference which year the courses were taken; only one expressed the opinion that the sophomore year was preferred because "the students are more mature." All of the others considered the present system of encouraging the students to complete their general education courses in the first two years to be the proper one. All schools did, however, allow upperclassmen to enroll if their schedules made it necessary.

Only three teachers, those of a biology department in one of the institutions visited, thought that it made some difference as to which area of general science was taken first by the student. They felt that general physical science should come first because the information learned there, especially with respect to chemistry, provided a needed background for the study of biology.

#### Relationship of Available Time to Course Content

In considering the role of science in the general education program, one comes face to face with the formidable task of meeting the objectives of general education in the hours made available to this area. A writer mentions this same problem. He says, "The task of meeting these additional objectives without exceeding the eight semester hours occupied by the science surveys seemed to be an impossible assignment."<sup>5</sup> Actually, many schools require more than the eight hours of science to fulfill the general education requirements. However, since this was the existing system in the six Oklahoma colleges at the time of the study, the teachers were asked question 51, "Is it possible to teach a significant portion of the scientific phenomena in a four-hour course?" Also in this same line of thinking, question 50 asked of the teachers, "Are the courses attempting to cover too many units?" Still concerned with the matter of time allotted to the coverage of the sciences, question 52 was directed to all those on the interview list. It reads, "Without reference to the entire general education curriculum, how many hours do you think the student

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<sup>5</sup>Clement L. Henshaw, "Physical Science: A Way of Thinking," Accent on Teaching—Experiments in General Education, ed. Sidney J. French (New York: Harper and Brothers, 1954), p. 135.

should have in biology? In general physical science?"

A writer points to this lack of sufficient time to cover the necessary material. He says, "Clearly the problem of doing justice to the growing body of subject matter in the field and simultaneously supplying the desired breadth of background, offers a real challenge to the educator."<sup>6</sup> However, he adds, "Rather than concern for the limited number of hours available to present the subject, better if we are concerned with the maximum utilization of each hour available in moving toward the stated goal."<sup>7</sup>

Of the 27 persons who gave an opinion concerning the attempt of the existing courses in science in general education to cover too many units, thirteen answered in the affirmative, fourteen gave a negative reply, and one said, "Yes and no." A few chose to expand these statements. Among those who thought too many units were being covered was one who said, "That is my greatest objection to the general physical science courses. They become nothing but survey courses as far as I can see." Another replied, "Yes, we are covering too many units, but to give a unified presentation we can't do anything else." Looking at it from the viewpoint of the student, one said, "The reaction of the student is that we are too generous in our aims." Another pointed out, "We never quite cover all the areas we would like to."

Taking the other view that too many units are not being attempted, a biology teacher said, "We have cut down the number of our units and we

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<sup>6</sup>Duncan E. MacDonald, "On the Education of the Scientist," College and University Bulletin, VI (May, 1954), 3-4.

<sup>7</sup>Ibid.

are doing a better job." Another took the position that "working according to the ability of the students eliminates this problem." Three teachers of general physical science were emphatic when they pointed out that the units being covered were at an absolute minimum. Explaining the method used in one department, a teacher said, "We try to cover adequately the portion we have selected and, if we are running short of time, we eliminate some of the less important units." Yet another used this same practice, but in each case it is to be observed that practice seems to deny their statements concerning the teaching of too many units.

Growing out of this discussion on the number of units being taught was the question of whether or not a significant portion of the scientific phenomena could be taught in the four college hours per course. There were not as many complete answers to this question, probably because several considered that they had answered it as a part of the previous discussion of the number of units that could be covered. A tabulation of those who did answer, however, shows that twelve teachers gave "yes" as an answer; five said "no"; while two were evasive.

Of the affirmative view, one said, "We may not cover all of the material in the biology text, but we do teach the most significant parts for the general education program." Another, speaking of his part in the course as a teacher of chemistry, said, "We can't give much idea of chemistry in so short a period, but we can teach him enough for his everyday life." Speaking philosophically, another teacher said, "I guess it is possible to teach a significant portion, but we are all idealists and want them to get more out of it than they actually do." One gives as proof the fact that "the majors we pull into the advanced courses all indicate that

they have had a good background in the biology area of general education." A different thought was expressed by one who said, "If the fields are carefully chosen, we can do it."

Some strong opinions were found among the five who believed it was not possible to teach a significant portion of science in the four-hour courses. One statement was, "Obviously not! You can just make an introduction to it." Another said, "Perhaps a portion of it could be taught if we would concentrate on one area, such as physics, and give them a thorough knowledge and the analytical approach." Judging from his answer it would seem that he leans toward the philosophy of liberal education rather than the general. A simple answer by one was, "We just don't offer enough science in the general courses."

It was hoped that a clear-cut answer to the desired number of hours for the general courses in science could be gained by asking the teachers to consider the matter without reference to the whole program. However in two cases, teachers insisted on basing their discussion with an eye toward the total curriculum. One said, "If it were not for the other general education courses, I would probably give the student a little more than four hours, but as it is four hours in each area should satisfy the requirements." The other replied, "Four hours is enough in view of the total program." Five others were satisfied with the existing number of hours and made no qualifying statements. Another said, "The more a student has, the better, but he needs at least four hours." Five persons favored a change to five hours each in general biology and general physical science, four would require six hours in each course, with eight hours in each being advocated by nine persons.

Course Materials

## Teacher Problems of Selection

Speaking of science in the general education program, one source says:

Materials for the course must be highly selective. In the limited time available it is impossible to cover an entire field exhaustively. Concern over what is included in the course will produce more results than worry over what has been omitted.<sup>8</sup>

The choice of materials for the general courses in science by the individual teacher has been pin-pointed for this section by two questions. Number 53 asks, "In what divisions of the biological or physical science is the selection of materials for instruction the least problem for you? Why?"

Asking for the opposite reaction, question number 54 is, "Where do you experience the greatest difficulty in selecting that which shall be included in the course of study? Why?" The answers from the Oklahoma teachers almost defy categorical classification. However, several did follow a pattern, such as being better able to select material for instruction from their specialized area. A chemistry teacher said, "I have the least trouble selecting the material for the chemistry part because I am more familiar with it." A physicist used much the same explanation for the physics units, adding, "I have plenty of material for demonstration on hand for the physics area." Another physics teacher answered the same, but added astronomy as an area that was the least difficult to handle. That he lacked confidence in the other sections was shown by his statement,

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<sup>8</sup> Earl J. McGrath et al., Toward General Education (New York: The Macmillan Company, 1948), p. 98.



"I feel I am not qualified to go into chemistry." Another chemistry teacher said, "I am prejudiced toward my own field, and it is the easiest from which to select materials."

Other types of answers were given also. One listed physics and chemistry as both being relatively easy in the selection of material; another named astronomy, because the text does an adequate job in this area. One teacher enjoyed selecting all of his materials because much of it was taken from current magazines and journals. He stated that he was trying to impress his students with the importance of reading that sort of thing. Five thought it was neither more nor less difficult to select instructional materials from one area than from another. Several teachers said that the poor background in science of many of their students made the selection of course of study content more difficult.

Six of those interviewed recognized their own inadequacies in selecting materials outside their field. Geology was one of the most frequently mentioned trouble spots, one saying, "I am no geologist!" There were five who answered the question by saying that they encountered virtually no problems in the selection of materials for the general courses. One explained this by commenting, "I have a broad background." A biologist said, "I teach only the general course in biology and have never had any problems." Another teacher followed the text and so had no difficulty in selection. He stated, "The students are pretty well wedded to the text anyway, so we just go as far as we can and do as much as we can with it."

Two answers having a different approach came from teachers. A physicist discussed a problem that logically might have appeared more often. He showed a depth of insight when he said, "I find it most difficult

not to teach physics in the traditional manner from the mathematical viewpoint as I have been doing in the physics courses for years." He went on to say, "I probably do a better job for the general courses in chemistry because I do not know it quite so well." The other answer, from a biology teacher, also exhibited a great deal of self-analysis on the part of an educator. He commented, "My biggest problem is to present what is actually known about human biology without shading off into propaganda and speculation."

#### The Historical Approach to General Education in Science

The next question, number 56, was used in an attempt to find the reaction to the many recent writings concerning the presentation of the general courses in science as a history of science. It asks, "Could the objectives of general science be met through a course in the history of science?" One of the strongest statements for the historical approach to science in general education is that of the Harvard Report which states:

The claim of general education is that the history of science is part of science. So are its philosophy, its great literature, and its social and intellectual context. The contribution of science instruction to the life of the university and to society should include these elements, since science includes them. A science course so constructed as to encompass these elements makes an important contribution to general education. It need not by that token make a poorer contribution to an education in science. One can defend the view that it is all the better science for being good general education.<sup>9</sup>

Another source indicates two approaches to science, one of which is the historical approach explained by the Harvard committee. This

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<sup>9</sup>Harvard Committee, General Education in a Free Society: Report of the Harvard Committee (Cambridge: Harvard University Press, 1945), p. 222.

reference points out that such a course would be valuable in illustrating the strategy and tactics of science, but recognizes a weakness in the approach. It states, "In this approach the problem is studied in retrospect and thus tends to lose the value of 'discovery'. . . ."10 Krauskopf also mentions the historical approach and would include it as a part of the general course. He writes:

To present science as a unified, meaningful branch of knowledge requires, I believe, these two things: first, that the development of science be placed in its proper historical context; and second, that some conception be given of the whole broad scope of science.<sup>11</sup>

An overwhelming majority of the Oklahoma teachers of science in general education were either definitely against the teaching of science from the historical approach or had grave doubts as to its value. Twenty-two persons took a stand against the idea; seven gave qualified answers that were only partially in favor of such a program. One of these said, "I believe the historical approach could be used if we had an eight-hour course." Another, showing little enthusiasm, said, "I suppose it could be of value, but I am not too familiar with it." Another said, "I would enjoy teaching such a course." Two others thought the historical approach could be made to meet the objectives of general education if it were handled correctly.

Five of those who felt the historical approach alone would not serve the purpose expressed the opinion that a knowledge of science should

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<sup>10</sup>Sidney French and Merrill P. Rassweiler, "The Physical Sciences," General Education in Transition—A Look Ahead, ed. H. T. Morse (Minneapolis: The University of Minnesota Press, 1951), p. 173.

<sup>11</sup>Konrad B. Krauskopf, "Science in General Education at the Mid-Century," The Journal of Higher Education, XXII (February, 1951), 63.

be a prerequisite to such a course. As one says, "The history of science would be interesting to one who has studied science." Another view is, "You can't look back with understanding until you know some science."

Other reasons for opposing a course in the history of science were given. A biologist said, "We could not present the important biological principles that the students need." A chemist remarked, "I don't think the students would get much chemistry out of it." Keeping in mind the objective of general education that would teach scientific thinking, one said, "If we are trying to teach the students to think and we find where someone in history had used false principles and succeeded, there go our efforts." Another teacher was afraid the historical approach would develop to mere factual learning of names and dates. He added, "That would be the static approach to science rather than the dynamic." A strong stand against the course was taken by one who said, "Emphatically not! I want my course to be in science, not about it!" The others merely stated that they felt a course in the history of science would not meet the objectives of general education, and declined to elaborate further. None of these seemed to understand fully the approach to the teaching science through its historical development.

#### Suggested Changes

Out of a discussion on the problems encountered in planning the curriculum one might expect to encounter opinions on changes that could alleviate some of these difficulties; therefore, question 55 was included here. Directed to the deans, chairmen, and teachers, it asks, "What new course or major variations in that which we have would you suggest, if

any?" Because each school across the nation will have a slightly different curriculum, thus different changes to suggest, this section will deviate from the regular pattern and be written entirely on the statements by the interviewees.

A dean and a chairman from one school brought out the same suggested change, leading us to surmise that some previous discussion of the matter had taken place. They would like to offer a course in science designed specifically to train elementary and secondary teachers in all areas. The dean added, however, "I don't know where we would find a teacher for such a course." A teacher proposed to rearrange the general physical science course, "starting it with the atomic structure and basing all I could on that one fundamental law." A chemist felt that chemistry should be dropped from the general courses, because "students get the wrong attitude toward chemistry in that length of time, and it is practically worthless."

A different suggestion was made by a teacher who would add a "capstone course at the junior or senior level." Here he would integrate the sciences with other areas. Another idea was given by a teacher who would offer a "nontechnical discussion course" for the general education student. A biologist suggested that all students be required to take the general courses. He believed that even those who go on to major in the field would save time this way. A course in nature study was another's expressed desire. He would have the students study "the existence of things as they see them together in the woods or fields."

The need for more time or smaller class loads was suggested by three teachers. Six persons would make no changes at the present, one of

these saying, "I would like to continue on the same basis for three or four more years before we make any drastic changes."

Seeing a need for laboratory work, five teachers suggested this addition. Two of these pointed out that smaller classes would be necessary for such work, one adding, "We would like a laboratory, but with the number of students we have, we approach it with fear and trembling." The existing situation of laboratories for the general courses will be discussed at greater length in the section immediately following.

### Laboratory and Auxiliary Facilities

Even though there are many questions included in this section, they lend themselves to being grouped together under this one general heading because of the dearth of answers. In previous sections of this study the teachers of science in general education have expressed the desire for laboratory work. A thorough study of the six Oklahoma colleges revealed that no institution offered a laboratory course, as such, in the general education science courses. One school attempted to use one class period a week for laboratory work in biology for a few years, but increased enrollment caused them to discontinue the practice.

One writer recognizes the necessity and the difficulty in conducting a laboratory, and suggests a substitution. He states:

The question of laboratory work is a difficult one. Certainly the laboratory offers the opportunity of participation by the student, and if properly conducted, it can stimulate interest and appreciation. Since the strength of modern science lies in checking theory against experiment, it is desirable that the student should experience this process. However, laboratory work is also time consuming, and time is limited. It has been shown during the war that good demonstration experiments can accomplish most, if not all, of the ends of laboratory work in an elementary course. We recommend that in lieu of laboratory

work an adequate number of good demonstration experiments be given with the course.<sup>12</sup>

Questions 75 through 80 have proved unnecessary except for emphasizing that now laboratory experience is provided in the general courses. They ask, "Is there a laboratory associated with any of the general science courses? Which?" "How extensive is this laboratory?" "Has it proved successful?" "What are its strongest points?" "What are its weakest points?" "What has been done to strengthen these weaknesses?"

Question number 81, which asks, "Are any additional laboratory units being considered?" brought little more response. No actual plans were underway for laboratories, although one said, "We keep thinking about it." These thoughts lead one teacher in the direction of an untried program. He proposed to give the student an optional fifth hour of credit for laboratory. This would not be organized on a formal basis but would include home experiments as well as those carried on in the school laboratory. The emphasis in all cases would be upon individual learning experience, with originality as the key criterion.

Questions 82, 83, 84, and 85 are also invalid. Referring to additional laboratory units being considered they ask, "In what area?" "Why is this change being considered?" "Are there plans for dropping any laboratory?" "Why?"

The next two questions brought about a discussion of actual practices again. Number 86 asks, "To what extent is the demonstration used?" and number 87, "Do students follow the demonstration as closely as they would their own experiments?" Every person interviewed used demonstration

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<sup>12</sup>McGrath et al., op. cit., p. 96.

at some time. No answer was specific as to how they were used; however, they varied from very extensive use to very little. Three used them to a very limited extent. Another said, "Some." Two others said, "Not as much as we should." Three more said a demonstration was given in almost every class period. There were six others who responded with various expressions designating quite extensive use.

Eleven teachers stated that the students followed the demonstration as closely as they would their own experiments. Fifteen said they would not. Most of the reasons given for not finding the demonstrations satisfactory as a substitute for laboratory work concerned lack of interest on the part of students. The only one who elaborated on his preference for the demonstration said he felt it gave him a better chance to explain what he was doing.

Making the next discussion more inclusive, question 88 asks, "Could a system of audio-visual aids and demonstrations be an adequate substitute for the laboratory?" The same teachers who refused to accept a substitute for a laboratory in the demonstrations also failed to change their statements when the program included visual-aids. One said, "It is still somebody else doing it." Another said, "Nothing could replace actual experience."

Pursuing the use of visual-aids still further, question number 89 asks, "To what extent are movies, strip films, and similar visual aids used?" Following that question, 90 reads, "How do you rate their effectiveness?" Each teacher interviewed used such aids some; most said to a considerable extent. Only one said he would not use films, stating that his students go to sleep. As to the effectiveness of visual aids, many



merely stated they were "quite effective." Two said they were better than lectures but not as good as a laboratory. Two others mentioned the need for briefing students on films before they were used; another said their use was only as effective as the quality of the film. One added that films lose their value if used too often. Two others used films as a review or summary after a unit has been completed. One preferred to do free-hand drawings for illustrations; another said, "Visual aids are good, but not sufficient to replace laboratory work."

It seems that the full potential of audio-visual aids in its different forms has not been explored. There are many ways in which a teacher wishing to develop this aid to instruction might extend and enrich the learning experience of the students.

### Integration

Integration might be studied from three different points of view. In common use today is social integration that refers to a well organized, functioning social unit. Another term, psychological integration, is used to designate a well-balanced individual. The one to which the writer will more closely adhere is that of a unified learning experience which has meaning for the student, both in relation to his course of study and to his everyday life.

### Existing Practices in Integration

Most current writers sooner or later hinge the value of general education on integration. Cunningham says, "Integration is a quality that all education should have. If it is not integrated . . . it is simply

not good . . . general education."<sup>13</sup>

Along this same line of thought, Eurich says, "Every program of general education designed to date stresses the need for integration."<sup>14</sup> He would credit this growing emphasis on integration to "a quest for some sort of unity now lacking in educational matters."<sup>15</sup>

Questions 33 through 36 on the list for this study were designed to discover the existing situation in the Oklahoma State Colleges in regard to integration. Number 33 asks of the deans, chairmen, and teachers, "Has anything been done toward integrating the science courses with other subject matter areas, e.g., philosophy as presented in the humanities or geography in the social studies?" Going further, these same educators were next asked in question 34, "Is there any cooperative effort between departments such as the science teacher directing the technical reading for an essay in English?" The deans were then asked concerning future plans. Question 35 asks, "Do you know of any present activity or thought on your campus relative to increased integration of courses or cooperative efforts either from groups or by individuals?" And finally, seeking the methods by which efforts toward greater integration might be made, question number 36 asked of the deans and teachers, "Is there any organized method by which teachers of different subjects may become familiar with

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<sup>13</sup>William F. Cunningham, General Education and the Liberal College (St. Louis: B. Herder Book Co., 1953), p. 12.

<sup>14</sup>Alvin C. Eurich, "A Renewed Emphasis upon General Education," The Thirty-eighth Yearbook of the National Society for the Study of Education, Part II: General Education in the American College, ed. Guy Montrose Whipple (Bloomington: Public School Publishing Company, 1939), p. 7.

<sup>15</sup>Ibid.

the phases of their work which are also covered by other teachers?"

Answers to the questions regarding practices of integration between courses were preponderantly negative. Thirty-seven persons gave answers varying from "very little" to "nothing." Several did, however, mention personal efforts to teach for unified learning. A biology teacher attempted to relate his course to "health problems, heredity, and other things that affect society as a whole." Five teachers referred to the relationship of geography and the general physical science course; three pointed out the overlapping of biology and philosophy.

Two persons gave a clear cut "yes" to the question concerning the practice of integration between courses. One of these, a departmental chairman, said, "In biology we bring in the implications in the fields of social science, economics, and other aspects of society." The other, a teacher, placed his efforts toward integration on "stressing the importance of being able to read and use good English." He said, "I am more concerned with a student's ability to read and think clearly than I am about any courses he may have had."

When question number 34 was asked concerning a cooperative effort between the English and science departments, thirteen interviewees related some instances of having helped students select reading material for research papers for an English course. Though the suggestion in most cases came from the English department rather than from the science teachers, most interviewees seemed glad to assist in such projects. A chairman gave the only dissenting view when he discussed the style of writing required by the English department. He said, "There is always some difficulty in that because the English people want all their writing to be

poetic and up in the clouds while we want short, specific statements of facts that lead logically to a conclusion."

Fourteen teachers of science in general education had never attempted to cooperate in any way with the English department. One of these said, "I have never heard any talk of integration"; another stated, "We just carry on our own particular phase of general education."

Very few concrete answers were given on cooperative efforts by groups or individuals to increase integration. One, admitting a need for it, said, "Each teacher has his own way and resents anybody's trying to change us." Another said, "If I try to work integration into my course, I am accused of getting off the subject." Mentioning that he had heard some talk of integration, another teacher felt it was "not of major interest" in his school. A chairman would ask his physics students to "get more mathematics" in an effort toward increased integration. Such a statement from a chairman showed little understanding of the philosophy of general education. A further check also showed he was the one person who resented working with the English students on term papers.

Looking toward integration as one result of an organized method whereby teachers might become familiar with the phases of their work which are also covered by other teachers, question 36 sought further discussion with deans and teachers. Only four could point to formal efforts in this direction, many of these adding that there should be integration. Two persons from the same institution named American Association of University Professors as contributing to a better understanding and cooperation between departments. One mentioned that general education had been discussed in a recent meeting, adding that about half the faculty belonged

to the organization.

A dean in one school told of a series of faculty meetings that "cut across departments of related activities." What he termed "bull sessions" where teachers aired their problems was not mentioned by any teacher in that school as contributing to integration. Two conclusions might be drawn. Either the sessions were too new for the faculty to have realized their purpose, or they failed to make the association between a knowledge of other courses and integration. A fourth person said, "From time to time we have discussions and explain to teachers in the other fields what we are trying to do." Many who said they knew of no formal efforts toward increased integration added that something should be done.

#### Need for Integration

Throughout the study of the aims and goals of general education there is repeated allusion to unity in thought or attempts to bring all areas of learning into a meaningful whole for the individual. Indeed, to some, integration has become synonymous with general education. Looking at all aspects of a student's life, Bigelow and MacLean say:

General education attempts to bring them together in all the patterns necessary to feed the growth of individual students towards maturity, towards the building in him and for him of a personally satisfying and socially useful philosophy of life regarding himself and the world. . . . Such evidence as is at present available gives promise that general education can immediately move fast and far in helping students toward more effective personal orientation and integration.<sup>16</sup>

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<sup>16</sup>Karl W. Bigelow and Malcolm S. MacLean, "Dominant Trends in General Education," The Thirty-eighth Yearbook of the National Society for the Study of Education, Part II: General Education in the American College, ed. Guy Montrose Whipple (Bloomington: Public School Publishing Company, 1939), pp. 366-67.

Although this writer speaks of personal integration, it is evident that only through unity in learning can this feat be accomplished. Another writer relates how this has succeeded in a school where integration is emphasized. He states, "The conscious attempt to integrate the materials seems to have increased student ability to think, to organize materials, and to draw conclusions."<sup>17</sup>

One straightforward question was directed to the deans and teachers of the Oklahoma colleges to get an opinion on the desirability of further integration. It is number 37, which asks, "Do you feel further integration to be needed or desired?"

Twenty persons answered in the affirmative with varying degrees of enthusiasm. About half were emphatically in favor of further integration. A dean said, "That is the greatest weakness of our program." Those showing less feeling made such statements as, "It's worth trying," or "Possibly it could be worked out better."

Taking the other side, five teachers could see no reason for further integration. Each chose to defend his view. One said, "I just don't see how we could improve things." Another said, "If we have any problems we get together and discuss them. That is all that is necessary." A third feared further integration would make "hash" of his courses, while the fourth answered "no" because he thought any college graduate should be expected to be well educated in a general sense according to present standards.

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<sup>17</sup>B. Lamar Johnson (ed.), What About Survey Courses? (New York: Henry Holt and Co., 1937), p. 344.

## Integration with the Sciences

Turning from the discussion of integration between courses, many writers look toward a synthesis of knowledge into a unified whole within the area of science. Pointing out this need, one says, "A student taught one or two facts about one or two trees cannot be expected thereby to be at home in the forest. Some attempt at integration of learning must be made."<sup>18</sup>

Another writer demonstrates how the concept of integration has changed through the years in one school to encompass the entire science offering in general education:

Holism at first crept into the course in that section dealing with the whole animal and the whole plant. . . . As its significance grew on us we made it the concept that supported the whole course. Eventually, we even broke our way into the course by stating that our primary purpose was to discover biological wholes. Today this has become the guiding principle for all four integrated courses; each course in turn building toward a larger whole.<sup>19</sup>

The teachers of science in general education in the Oklahoma State Colleges were asked question 49, "Have the science courses in biology and general physical science been successful in synthesizing their areas of science into a unified whole?"

A significant number failed to answer this question on the grounds that they had no way of knowing. Others gave such answers as "not sure," "I think so," and "we try." Eight believed the students were probably not being taught as a unified whole. One of these said, "Students feel they are walking out of one world in biology into an entirely different one in

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<sup>18</sup>McGrath et al., op. cit., pp. 94-95.

<sup>19</sup>Lucy Kangley (ed.), Effective Practices in a Program of General Education (Dubuque: Wm. C. Brown Co., 1954), p. 69.

physical science." Another says there are "very definite lines that stand out between the departments."

Four teachers were fairly certain of their success in teaching science as a unified whole. Two of these mentioned overlapping units within a course. The other two credited any success in this respect to having taught both physical and biological science.

The administration of the general education program is considered at another place in this report, but from the preceding discussion it becomes apparent that further integration is desirable and needed; yet this is not being accomplished under the present organization. A person in charge of the program of general education is needed to promote greater unity. The first need for this is in the integration of subject matter.

### Conclusions

For effective curriculum planning the general education program requires extensive and organized effort. This condition exists only at a minimum in the schools considered. Conferences for this purpose are largely chance meetings or coffee break conversations. Only sporadic improvement can come from this conference-over-coffee type of effort.

There is no provision in any of the Oklahoma State Colleges for the sectioning of students according to their varying abilities or the extent of previously acquired knowledge.

The selection of content material for the general education courses is by its very nature a major problem. There is so much material which might be profitably included and so little time for its presentation that the teacher must constantly guard against reversion to survey courses.



The teachers are aware of this and the need for more time in which to properly meet the ends of general education in science.

Not so many suggestions for changes in the existing courses were given as one might anticipate. The knowledge that there is little likelihood of being able to effect a change in the present organization of the program may account for this. The suggestions for change which were given fall into the usual pattern of discussion such as courses designed specifically for certain groups, need of smaller classes, and the laboratory experience as a part of the course.

The next major step in the improvement of the program of science will come through greater unity of course material and objectives both horizontally and vertically. The very essence of general education is that it shall tie knowledge together into a unified whole to be used by man in making critical judgments. In this respect the program is very weak, there being no organized effort in that direction and only the most tenuous of informal arrangements. These improvements cannot come about until someone in each school has been given the direct responsibility and time for organizational and instructional leadership.

## CHAPTER X

### EVALUATION OF THE PROGRAM

That there is a need for an evaluation of any program before it can justly be called successful is a fact that few will question. However, a query concerning the means by which such an appraisal can be made in the field of general education will bring as many variations in answers as were found when dealing with objectives for the general courses. Many have doubts that an accurate measure has been devised. A writer says, "In the last analysis, teaching, like prayer, is an act of faith in that an empirical test of its ultimate effects is unavailable."<sup>1</sup> This same author, however, goes on to point out the necessity for some effort toward evaluation without which "one cannot properly judge whether the whole expensive educational enterprise is getting anywhere or whether it is just a convenient device for keeping a million teachers in pocket money."<sup>2</sup>

The purpose of this chapter, then, is to attempt an evaluation of the science courses in the general education program of the six Oklahoma State Colleges from the viewpoint of the presidents, deans, chairmen, and teachers. They were asked to appraise the success of the courses, to give

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<sup>1</sup>Henry S. Dyer, "Can General Education Courses in the Sciences be Evaluated?", General Education in Science, eds. I. Bernard Cohen and Fletcher G. Watson (Cambridge: Harvard University Press, 1952), p. 187.

<sup>2</sup>Ibid., p. 188.

the means by which evaluation of courses was made, and to state the conclusions reached as a result of these evaluative procedures. In addition, criticisms of the existing testing programs designed to show the degree of development of the individual student were sought. Twenty-one questions were used to lead the discussion toward the development of this chapter. Each of these will be listed and explained in the section in which they are used. Following the pattern of the previous chapters, references furnish a background for the statements by the Oklahoma educators.

### Teacher Appraisal of the Science Courses in General Education

Pointing again to the importance of science in general education for all students, Eric Rogers reminds us of matters on which we should question ourselves in the teaching of these courses. He states:

Much of the welfare of civilization, and perhaps even its fate, depend on science. Do our science courses educate students to understand this dependence? . . . Do our science courses send their students out delighted with that understanding of science, and ready to turn it in new directions? Can governors and administrators who have taken our science courses confer intelligently with scientists on the vital problems of our age?<sup>3</sup>

Each teacher on the list of those to be interviewed was asked for an opinion on the success of the courses in meeting the needs of the students and society. This is question number 40 and it asks, "Has the material now utilized proved generally successful; in other words, do you feel the type of program we have now is best suited for students in your school? For society?" Varying judgments concerning success were shown by

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<sup>3</sup>Eric M. Rogers, "The Good Name of Science," Accent on Teaching—Experiments in General Education, ed. Sidney J. French (New York: Harper and Brothers, 1954), p. 165.

these opinions. Some were enthusiastic; others showed doubt.

In commenting on how well the general courses met the needs of the student and society, ten teachers merely gave a "fair" rating to their success. They used such phrases as "pretty well," "fairly successful," "to some degree," and "doing quite a bit of good." Most of these people qualified their answers by adding that there was room for improvement. Two mentioned that laboratory work would better fit the course to individual needs. Another said, "We are doing as well as we can in the number of hours we are allotted."

Seven persons considered their courses very satisfactory in meeting the needs of the student and society. Two of these were quite emphatic in their appraisal. Though the others answered less positively, in their opinions their work was quite successful. Five individuals did not know how much their classes contributed and declined to give an opinion. One said, "I wish I knew." Another felt that he was "headed in the right direction" but had not studied the problem enough to know.

Some of those interviewed preferred to give explanations as to the extent of their success. One said, "Probably, my course works in the same abstract way that all courses do in adding to the student's total personality." Another said, "At least the students seem interested." Still another pointed out that his courses "give the student a good view of science." Five teachers expressed the opinion that the general courses were not meeting the needs of the student or of society. Three thought the existing science course left much to be desired. One was more specific when he said there were not enough instructional hours. Another made a more serious charge when he said, "This is just an adulteration of science!

It is about science, not science."

### How Science Meets the Objectives of General Education

A comprehensive statement concerning the objectives of science in general education comes from the Harvard group, which says, "It is not enough that courses in science purvey precise information, use mathematical methods, maintain laboratories, and avoid doing violence to the hierarchical structure of nature and of the sciences."<sup>4</sup> Referring to the immediate problem with which we are concerned here, they add, "Many such courses as now constituted have all these characteristics and still fail to make the full contribution to general education which is potentially theirs."<sup>5</sup> The teachers in the general courses in science in the Oklahoma colleges were given an opportunity to comment on the matter. Question 41 asks, "Are you satisfied that the content of the course you teach meets the objectives of general education?"

Variations were found in replies to this question concerning how well individual courses meet the objectives of general education. Many, however, felt they were meeting them. Sixteen teachers gave an unqualified affirmative answer to this question. Two more showed some assurance as they replied, "I am trying," and "I hope so." Four others showed less certainty and hesitated to answer. They used such phrases as "in a way," "not sure," "probably we could do better," and a plain "I don't know."

Again we find some individualistic statements. One answered "We

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<sup>4</sup>Harvard Committee, General Education in a Free Society: Report of the Harvard Committee (Cambridge: Harvard University Press, 1945), p. 155.

<sup>5</sup>Ibid.

meet about half of the objectives." Another said, "At least they get things they would not learn from other courses." One, speaking as a specialist, replied, "As far as the general course goes, it meets the objectives. It could do more in physics and chemistry, though." Two pointed out that they were successful in meeting the goals as they saw them. One added that his aims were to "give the students the basis of the fundamental laws of nature." Another was satisfied with giving "practical knowledge." Four felt they were not meeting the objectives of general education. One stated that no text book lends itself to meeting the objectives. Another said, "We are aiming too high."

#### Evaluation Methods

The dilemma of the specialist who is thrust into the position of teaching a course in the general education program after being trained in a particular field is described by Dunkel as follows:

The introduction of programs of general education raised several problems for the classroom teacher. There seemed general consensus that he was now more directly concerned with certain skills, attitudes, and beliefs than he had been before. To be sure, he had never been unconcerned with them. Instruction in any field had usually assumed that knowledge of that material would lead students to acquire certain broader, relevant skills, attitudes and points of view. But other outcomes were desirable by-products, thought to be more or less inevitable consequences. But with the coming of general education, emphasis shifted to these other matters. The question was not whether students knew physical science, but rather whether they were critical thinkers with proper . . . attitudes. . . .<sup>6</sup>

Remembering that the science teachers in the Oklahoma schools being studied are specialists, one can suppose that many of them have been

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<sup>6</sup>Harold B. Dunkel, "Problems of Instruction," The Fifty-first Yearbook of the National Society for the Study of Education, Part I: General Education, ed. Nelson B. Henry (Chicago: The University of Chicago Press, 1952), pp. 207-208.

faced with just such a problem as that of which Dunkel speaks. No longer able to appraise the success of their course and methods of instruction in the traditional manner, the measure of achievement in terms of the objectives of general education becomes a major issue for these teachers.

### Course Appraisal

A writer stresses the need for discovering what changes take place in the student's mind as a result of the general courses. He says:

If what he [the science teacher in general education] finds accords with what he hopes to find, he can have some assurance that when his students leave him, they are at least headed in the right direction.

What has come to be called educational evaluation is nothing more or less than the means by which a conscientious teacher can ascertain whether that kind of assurance is justified. . . .<sup>7</sup>

It was to discover the specific means used by the individual teacher for appraisal that questions numbered 42 and 43 were included in the study. They asked, "Do you have any way of appraising the success of your course in meeting the objectives of general education?" and "If the answer is yes, how is the appraisal made?"

Ten teachers admitted they knew of no way to measure the outcomes of their courses, one of them saying, "That is one of our weakest points." Seven persons used subjective tests as the best means by which to measure the results of instruction of science in general education. One said, "I just have my own opinion to go on." Three, using the subjective method in a different way, judged the effectiveness of the courses by conversations with the student after he had completed the course. One of these stated, "So many come by after the course is over and tell me how much

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<sup>7</sup>Dyer, op. cit., pp. 187-188.

they understand that they never knew before." Another said, "People come back after they are working and tell me they are using my materials." He adds, "Teachers, Sunday School teachers, and even two or three ministers have told me that." Another merely replied, "I just sort of have a feeling I am meeting the objectives."

Three science teachers partially measured their success in meeting the objectives of general education by the number who decide to go on to advanced courses. Two used student questionnaires for evaluation. One designs his examinations to test the extent of analytical thinking; another judges by the "rate at which his students comprehend new information." Another concluded, "The proof of the pudding is in the eating and maybe in twenty or thirty years we can conduct a study as to the effectiveness of the program."

#### Evaluation of Instruction

At first glance, the matter to be studied in this section may seem to repeat the previous discussion. To some degree it does overlap, but it should be pointed out that here the purpose was to ascertain the means by which appraisal of methods of instruction was made, rather than the ends of the course itself. Question number 73 was asked of the Oklahoma teachers of science in general education. It was, "Do you have any way of appraising the success of your methods of instruction in meeting the objectives of general education?"

A writer brings out the need for continued appraisal of methods and the selection of methods based on student needs. He states, "They are selected for trial on the basis of their probable value in contributing



to the objectives, and they are retained for future use if their tryout demonstrates that students have made substantial progress toward the objectives of general education."<sup>8</sup> The importance, here, is that methods of instruction should be subject to change if they have not proved successful. This brings us to the necessity of such an appraisal on which to base changes.

Eighteen answered that they had no way to appraise the success of their methods in teaching the general courses in science. Two more merely stated that they used a subjective measure with no further explanation. Describing the subjective means, five were more informative. One of these judged his methods by the things his former students told him "after it will not help their grade any." Another said, "I talk to people who have been out of my class a few years and they still remember certain points I brought out." A third used observation of student attitudes in class, while another stated, "If my students fail to grasp an idea quickly, I know the method of presentation needs to be changed." Looking to the student in later years, one teacher attributed the success of a person in his chosen vocation to the general courses. He said, "If he is successful, we can presume our methods have helped him to gain a better understanding of people, and he will fit better into society." Three respondents attempted to appraise the success of their methods by examinations and questionnaires. Still another based his judgment on standards set by his own experience as an undergraduate.

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<sup>8</sup>Ralph W. Tyler, Director, Cooperation in General Education: A Final Report of the Executive Committee of the Cooperative Study in General Education (Washington, D.C.: American Council on Education, 1947), p. 213.

### Successful Teaching Methods

Wynne states, "In the last analysis, the problem of general education is a problem of method."<sup>9</sup> The previous section concerning the means by which appraisal of the methods was made led up to a discussion of just what methods the individual teacher had found to be successful or to fail in teaching the general courses in science. These are the topics of concern in the discussion which follows.

Many writers agree that different methods may prove effective in the general courses in science. Leighton Johnson explains some of these by showing how they differ from the traditional courses:

There may be, for instance, more extensive use of libraries in the communities, more careful reading of newspapers and periodicals may be required, and students may spend time with local professional people and community officials in efforts to understand the workings of the community. . . . Instructors may make considerable use of audio-visual aids, and radio and television facilities may be required.<sup>10</sup>

Question 91 asks of the teacher, "Can you identify any reason coming from your teaching methods for the degree of success enjoyed in meeting the immediate and long range objectives of the course?" Almost every teacher interviewed gave a different reason for the effectiveness of his methods in meeting the needs of the student. One said, "Personality and preparation will bring success to any class." Another gave "enthusiasm and love of teaching" as the key. "Being well prepared" was another answer, while still another said his success was "just in the way

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<sup>9</sup>John P. Wynne, General Education in Theory and Practice (New York: Bookman Associates, 1952), p. 100.

<sup>10</sup>Leighton H. Johnson, Fostering General Education in the Community College, Professional Series Bulletin No. 14 (East Lansing: Michigan State University, 1956), p. 9.

I present the material."

One teacher attributed his success to "staying on the students' level and associating the material with things they already know." Another attempted "to arouse the curiosity of the students." "Departure from the lecture method is a big improvement," was one opinion; another said much the same thing when he pointed to the benefits of informality "where the students feel privileged to ask questions and participate in the discussion at any time." Participation was used as a method by still another teacher who predicted that "if one can just get them to participate in the demonstrations, he will succeed."

Instructional aids such as charts, films, slides, and plastic models were given as instructional tools by means of which two science teachers attempted to attain the objectives of general education. Another said, "I am constantly evaluating and changing my methods in the light of what I feel would be more beneficial to my students." Still another said to ask him again in a year because he was "still in the process of testing some new ideas." Showing that he had given a great deal of thought to the matter, one teacher based his methods on the theory that "nothing succeeds like success." He said, "If you give the student something he can do adequately, it will challenge even the mediocre student to enthusiasm, even though he may have had his mind set against the course in the beginning." This same teacher listed the prerequisites to good teaching as enthusiasm, knowledge of subject matter, patience, and a sympathetic attitude.

Seven individuals would make no attempt to identify any special teaching methods that had proved successful. Two of these were convinced

that their methods were quite successful, but could not attribute it to any single device. One said he had not given any thought to the matter, while another took the negative view and said, "I am not a successful teacher and I have no tricks of the trade!" Answers like this are the despair of one who is trying to find a pattern of successful methods, for this teacher is judged by her students and contemporaries to be one of the best.

#### Causes of Weaknesses or Failure

According to one published view, there are four weaknesses of the methods of instruction used in the program of general education. They are: "too much emphasis on textbook memorization, too narrow a range of instructional and learning procedures, the failure to provide for, and the failure to capitalize on the student's own motivation."<sup>11</sup>

In answering question 92, "Can you ascribe any clear-cut cause or causes for the degree of failure experienced in teaching your course?", the interviewees made specific reference to only one of these causes of failure. It was that of individual differences among the students.

Student attitude was given by several as the cause for a degree of failure. One interviewee commented, "The majority of the students come in here with a chip on their shoulders." Another made the same charge when he said, "They have the idea that these courses are just something they have to do before they can do what they want to do, and the stage is set for resentment." A third carries out the same complaint. He said, "They lack interest, they won't study, and many are just here

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<sup>11</sup>Tyler, op. cit., pp. 213-14.

because they have to be." A similar statement was made by another, but he placed the reason for failure on his "inability to find a method or trick to get them interested"; whereas a contrasting view is taken by a teacher who blamed the student. He said, "The students refuse to apply themselves when I ask them to learn chemical formulas, even when I tell them it is just as important as learning their multiplication tables." Two more mentioned student attitude as a cause of failure, one saying, "They just take it for credit," and the other, "Their interest is some place else and they just can't see science."

Three teachers spoke of lack of background of the students for the science courses in general education. Two others gave as a reason for failure the lack of time to cover the material. The need for a laboratory was pointed out by four more. A logical statement was made by one teacher when he said, "If I knew the cause for failure, I would do something about it before the end of the semester." This attitude was typical of those teachers who feel that failure of the students to have learned to the limits of their ability reflects something wrong with their teaching methods. As a part of their answers, two mentioned the large classes as contributing in some degree to failure of the student to meet the standard the teacher feels he should. Ten teachers could point out no causes for failure; yet none claimed complete satisfaction with the results of their teaching.

#### Testing Program for the General Courses in Science

One of the aspects of general education which many of the writers in the field have referred to broadly or have ignored completely is the

matter of testing for the desired outcomes of the courses in terms of student development. They write at length regarding the evaluation of the entire program, of the general education teachers, of the courses, and of many other things; but it is almost like running into a blank wall when an attempt is made to examine the prevailing testing programs of general education or of individual classes in the area. A few, however, do make an effort in this direction. One writer states:

Evaluation, like creative scientific work, is an art. Many aspects of student behaviour cannot be measured, and some about which we are concerned are still difficult even to express in words. Judgment by a responsible person is involved, but this is true even when a decision is made to include a given item in an examination. We must not be afraid to make these judgments—after all, it is one of the things for which teachers are paid—but we should constantly attempt to increase the number and variety of situations in which we can make judgments and to improve the criteria we use.<sup>12</sup>

This statement points up many of the factors which will be covered in this section. These include the methods of test preparation, the types used, the position of objectives of general education in relation to the testing program, the problems encountered in testing, and the development and study of a broad evaluation program.

#### Methods of Preparing and Administering Tests

Several questions have been used in interviewing the Oklahoma educators to furnish information concerning the methods used in preparing tests, the types of tests used most frequently, and those preferred by the individual teacher. They will be presented as they fit into the

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<sup>12</sup>Fletcher G. Watson, "What the Instructor Can Do about Evaluation: Techniques and Examples," General Education in Science, eds. I. Bernard Cohen and Fletcher G. Watson (Cambridge: Harvard University Press, 1952), p. 209.

sequence of the discussion.

One discussion of the need for a better understanding of the methods of testing in the general education program is:

While satisfactory methods for testing knowledge of the factual content are a part of most teachers' repertoire, few teachers are skilled in the construction of instruments which test for understanding of relatively broad concepts, principles, and generalizations for abilities to apply principles—particularly in novel situations—and for ability to evaluate and interpret new facts and conclusions. Most instructors fortunately have been more successful in developing such abilities in their students than they have in constructing valid examinations to measure them.<sup>13</sup>

Especially pertinent is the idea that, if we keep in mind the emphasis on the various areas of growth purportedly aided by the courses in general education, we can no longer rely on the simpler method of testing for facts.

Another writer deals with the matter more specifically. He says, "There are many difficult, technical problems in the creation of satisfactory tests, examinations, surveys, and other appraisal instruments, and most faculty members need help on these problems."<sup>14</sup>

The preceding statement leads us directly to the problem at hand and the methods by which the teachers in these Oklahoma colleges prepare examinations. Five questions used here deal with joint preparation of tests, integration of examinations of various teachers, and the use of a committee or other special help to prepare examinations. Questions 113 and 114 ask, "Is there a program by which teachers come together to prepare

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<sup>13</sup>Earl J. McGrath et al., Toward General Education (New York: The Macmillan Company, 1948), p. 217.

<sup>14</sup>Agnes L. Adams, "Appraising Student Achievement and Development," Current Trends in Higher Education, 1949, ed. Ralph W. McDonald (Washington, D.C.: Department of Higher Education, 1949), p. 89.

examinations?" and "Is there an integration of examinations of various teachers?" Question 115 is similar to the first of this group, but refers to a more formal organization for preparing tests by asking, "Is a committee ever used for the preparation of examinations or has there been one in the past?" Question 116 asks, "Is a specialist's help available or used in the preparation of tests and examinations?" Concluding the discussion, question 118 asks, "Do you prepare your own examinations?"

With but two exceptions, the Oklahoma teachers interviewed prepare examinations by themselves with no efforts toward integration or cooperative work through committees. Both exceptions were in the biology departments of different schools. In one of these schools, a biology teacher said, "All of us in biology work together on the examination and give the same ones or slight modifications to all our classes." The other teachers verified the statement. In the other school the biology teachers cooperated to design and administer a common final examination for the general education courses in biology. A teacher from another college remarked, "For two years we tried an integrated examination and found it entirely unsatisfactory."

Because of the difficulties encountered in making a valid and reliable examination for the general courses, the question concerning the availability of a specialist's help in the preparation of tests and examinations was asked of the deans and teachers. No single person on the interview list indicated that such help was being used; however, several mentioned that it was available. Most said, "I make my own tests." One answered, "We could get help from the education department if we wanted it." Another teacher in that same school said, "We have never asked for



help." A dean from a college which had no testing specialist at the time of the interview said, "We are trying right now to employ someone in guidance, counseling, and testing who will be available to help our teachers on their examinations."

### Standardized Tests

Question 117 asks, "Have any standard tests been used for student evaluation in the general sciences?" This question brought negative answers from everyone on the list. Negative consensus was also obtained on question 120, "Is there any teacher or group of teachers in the process of preparing standardized tests for this area?"

Several chose to express an opinion on the use of standardized tests for their classes. A dean said, "There are some teachers who might teach for the passing of a standardized test." A teacher answered, "I haven't seen a standardized test that would fit the material I use well enough to justify it." The chairman of a science division expressed an opinion against the use of such tests. He said, "Sometimes it leads teachers to teaching tests rather than teaching students because they are afraid the head of the department is going to be critical of them if their students fall below the grade average of another group." A teacher said, "Our tests are 100 per cent better than the standardized ones because those are mostly true-false." Assuming that the statement refers to standardized tests as being mostly true-false, one questions whether this person is familiar with standardized tests and the principles of their preparation and use.

## Current Testing Practice

When the Oklahoma science teachers were asked question 123, "Of the types of tests most commonly given, which is most desirable? Which do you use most frequently?," almost as many different explanations were given for their choices as there are persons on the interview list. Many chose to discuss their entire testing program. Some of these would mix the objective and subjective tests. One explained, "Each day when the students come into class I give them a short objective test, and every four or five weeks I give them an essay test." Another, who would mix the types, said, "My students give a pretty good discussion, but anything that involves mathematical ability or reasoning I would put in an objective test."

A similar reason was given by a teacher who gives both objective and subjective tests to his students. He said, "We give the essay tests in which the philosophic attitudes and principles are discussed, as well as the objective tests for factual learning." Another teacher gave both types "so they will all have a fair trial." The same thought was expressed in different words by one who said, "I would rather give subjective tests if I had time to grade them, but I mix them up to help the students who do better on one or the other." Another teacher explained why he uses both types: "Once a week I give them a ten-or fifteen-minute essay quiz to develop their thinking and logic; once every six weeks I give them thirty-five to forty objective questions, and all objective questions on the final to save time."

Eight of those who most frequently used the objective type test stated that their reason for this was a matter of their time being limited

by class loads. One gave a typical answer when he said, "I have a feeling that the subjective test is the most desirable because it will prevent the student from minimizing the things he has covered in the course; however, because of the time involved, we tend to use the objective test."

Mentioning class size, another remarked, "With classes of forty or fifty students we are held to the objective tests, although occasionally I let them write a paragraph or two."

Three teachers gave the essay type examination most frequently. Two of these wanted to give the student more opportunity to express himself. Another says, "I would never use true-false questions, and the essay type test helps the students to improve their English."

The objective test also has its followers. A teacher said, "I give objective tests almost entirely because for many students it is the only type they are able to handle effectively." Five list multiple-choice and matching questions as being the most desirable for examinations. Going a bit further, one of these explained, "This takes the unrelated material out"; another said, "This gets a lot of answers in the limited time we have for tests." Two more of those interviewed were certain that the objective tests are the most desirable.

#### Problems Encountered in the Testing Program

Because so much that has been written about the problems encountered in testing in the science courses in general education concerns the evaluation of the courses in terms of objectives, the Oklahoma teachers were questioned on the matter. They were asked, first, in 119, "Are the standard tests or common tests for all teachers of a subject in conformity

with the objectives of science in education?" Question 121 asks, "Have any means been devised for trying to examine the development of the individual student along the lines set forth in the objectives of general education?" The third question of this group, number 122, allows for any particular problem in testing by an individual teacher that may be other than testing for objectives. It asks, "As a generalization, what is the greatest problem of testing in the general sciences?"

The question concerning the conformity of tests with objectives proved to be of little value in interviewing because it included the use of standard tests as well as common use of teacher-made tests. As was pointed out earlier, none of those on the list used the standardized examinations, and only two departments used the common tests. Thus for most teachers, the question was not applicable and brought no answer. The teachers in the two departments where common tests were used seemed to agree that the problem here lies in the fact that each individual teacher stresses some areas of the course more than others, making it difficult to measure the effectiveness of teaching in each area.

A writer makes a statement regarding the problem of testing for general education objectives. He says, "Measurement of attitudes, beliefs, values, appreciations, and similar outcomes is generally regarded as far less precise and satisfactory than the measurement of more tangible outcomes."<sup>15</sup> Leighton Johnson in writing on this makes a similar statement, asserting, "The evaluation of students' progress in general education must employ means which appraise understanding, attitudes, and abilities, as

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<sup>15</sup>Adams, op. cit., p. 88.

opposed to testing of memorized facts."<sup>16</sup>

No teacher in the six college science departments felt confident of his ability to test for the objectives of general education as they were established for his course. Five persons answered that they knew of no means by which this outcome could be measured. One of these said, "It is a problem for the administration." Three more believed that it could not be done. Another showed concern when he said, "I wish someone would tell me how to do it." Pointing out a growing awareness of the problem, one said, "I know that the actual problem is under consideration, but as far as any successful outcome, I just don't know."

A teacher in one school suggested a way other than formal examinations to evaluate the outcomes in terms of general education objectives. He mentioned that students were asked to comment subjectively on the value of the program. "We constantly have conferences with the students and ask them for criticism and evaluation." A different method was attempted by another teacher. He said, "The only means I have is to teach for a semester and give them an examination to evaluate what they have accepted in the course along the lines of the objectives I have set forth." He made no further explanation of the type of testing used to determine the effect of his courses.

The question concerning the problems encountered in testing actually resulted in more discussion on evaluating the outcomes in terms of the objectives than did the previous question. One teacher stated it clearly: "The greatest problem develops if you do not have the objectives

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<sup>16</sup>Leighton H. Johnson, op. cit., p. 10.

of the course clearly in mind." He went on to say, "It is a problem to know just how much of this material a student should have obtained, or should carry around with him as a result of having taken this course, or how deep his understanding of the material should be."

Others found this same problem but stated it differently. One said, "The greatest problem is to cover general principles rather than be too specific." He added, "It is often too easy to make out a test that would ask for specific data." A short statement from another pointed out much the same thing. He said, "The biggest problem is to test for things other than subject matter, that is, to test for application." Yet another answered, "Our greatest problem is to cover the fields of information adequately without stressing subject matter alone."

Several more were aware of the same problem. One replied, "It is the same as testing any other subject in general education, and our problem is to devise a test that will measure all or any integrated portion of the material added to knowledge and to find what the students have gained from a particular course." This teacher added, "You can pretty well test for knowledge, but for attitudes and any change in philosophy, testing is rather difficult." Another was more specific. He stated, "The greatest problem in testing is to conscientiously test for the objectives of general education rather than for subject matter." Meaning the same thing but stating it in more informal terms, another said, "I am trying this semester to make my tests conform with what I am trying to do." In an answer that covers much the same philosophy, a teacher states, "You know, it is easier to give tests that will actually test knowledge of subject matter than to test the ability to read and think problems

through, to evaluate materials, and to make opinions."

The general ability of the students to take examinations was mentioned by some as their greatest problem. One said, "The reading ability of some students is our greatest problem, causing us often to test their reading ability instead of their knowledge of science." He added, "We are trying to revise the questions and state them where we can get what we want, rather than just find out if the students can read." Another's problem is getting the students to understand what he is asking them. He said, "They seem to be weak in grammar and that sort of thing, making the mechanics of the test most difficult." Speaking of the scoring of tests as a problem, one states, "My main problem is in their answers, such as their spelling, which is deplorable." Another teacher goes further, saying, "My greatest problem is presenting the material and making sure the students understand the questions that I want them to answer; but I have to assume some fault there, myself."

Other teachers listed problems that were in many ways related to testing for objectives, but either went further in their discussion or fell short of the concern for the total objectives. One of these said his most difficult problem was to "test for analytical development." Another was concerned with "covering all the material that has been covered in the last period." Another brief statement of a problem was "the testing for comprehensive, big principles." Again pointing to one of the difficulties in determining attainment of general education objectives, a teacher said, "My problem is to keep the tests general enough to discourage memorizing a bunch of unrelated material that defeats the purpose of the course." Memorization was mentioned by another, who stated, "Devising

a question that does not need straight repetition of the answer and to ask for an answer involving the various factors a student has learned is not easy."

### Development of an Evaluation Program

Although one would not wish to imply that general education is on trial and must be evaluated for such a reason, he cannot, as one group states it, ". . . overemphasize the importance of maintaining a running check on the effectiveness of the program."<sup>17</sup> They further say that only by this appraisal and evaluation "can we know whether the individual and the society which the educational program is supposed to create are actually coming into being."<sup>18</sup>

Two questions were used in this study of the evaluation that is being done in the six Oklahoma State Colleges. The presidents and deans were asked in question 109, "Would you in your administrative capacity support an extended and strong program of evaluation and appraisal of outcomes in terms of student learning and benefit?" Concentrating on a more specific area, the science teachers and deans were asked, "Is there a planned program for the study of the student of science in general education in your school? Is this a research project, a committee study, an individual study?" This is question 128. These questions, then, would lead to the discovery of opinions from the administration and faculty concerning evaluation of the individual student as well as for the entire program.

Such a strong reaction against any planned program for evaluation

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<sup>17</sup>McGrath et al., op. cit., p. 224.      <sup>18</sup>Ibid.



was made by a president of one of the colleges that it will be necessary to quote his entire answer to explain his views:

Personally, I think a lot of these studies are just busy work and I can think of a lot of things that would be much more valuable to a college than so much time spent on whether or not it is worthwhile for a freshman to learn some things. I take for granted things like physics and chemistry. There would be no need to spend much time on evaluating the outcome of a good solid course in general education in science, or the humanities, or the arts. I would be willing to assume the outcome there and spend what little time we have on things that need some attention. I think we spend too much time on a tread mill when we ought to be devoting our time to significant things which are not so radical.

In another school, both the president and the dean saw a need for a program of evaluation. The president expressed the belief that such a program would be possible "after years or months of experimenting." He added, "If it were possible to inaugurate it, I would be for it because there is a need for some sort of evaluation." The dean said much the same. "If anyone knows how or can build such a program, I am for it and would help administer it."

The administrators in three other schools looked favorably toward an appraisal of general education. A president said, "I would welcome it." A dean went a bit further, saying, "Yes, I certainly would be for it if it could be set up and organized so that we would be getting the things we want from it." The others merely stated that they would give support to an evaluation program.

The question concerning the evaluation of the student in the science courses of general education could have appeared in an earlier section on the student. However, since it is complementary to the discussion of a program of appraisal, it has been included here. The answers, for the most part, were very noncommittal, showing that there were no formal

studies being conducted for the purpose of evaluating the student. In three schools a few teachers mentioned the committee for the study of the entire program of general education which includes the student in science.

In one school a teacher pointed out that the general education committee was at least thinking along these lines. He said, "They are planning to prepare some standardized tests in all subject areas to be given over a period of a year or two in order to determine what improvements the students in general education have made in all general education experience." No one else in this school mentioned any such program, leaving us to suppose that it lacked support from other members of the science faculty.

### Summary

Effective evaluation has, indeed, become one of the weakest points in our entire program of general education in the Oklahoma State Colleges. Not only is there no common means by which the program is evaluated, but the teachers must confess their lack of ability to judge the outcomes of their individual courses.

This lack of appraisal comes as no surprise at this point in the study. If there is no common understanding of the aims or objectives of general education, could we expect, then, a successful evaluation with no standards by which to judge?

An alleviating consideration, however, is that our primary objectives are with outcomes in terms of the student rather than knowledge of pure subject matter. It is admittedly difficult to develop instruments to measure what has been accomplished. Studies which have been made on

the outcomes of general education point up this difficulty.

Clearly this matter of evaluation must receive greater emphasis in the future if the program is to improve. Simple continuation of the program without means of measuring the progress or recession can only by chance lead to success.

## CHAPTER XI

### GENERAL EDUCATION SCIENCE IN TERMS OF STUDENT NEEDS

A commonly accepted philosophy in education today is that the student is the hub around which our educational wheel turns. This idea is especially adaptable to general education. However, the study of the student is not a new undertaking, whether it be in general education or otherwise. The discussion of a portion of such a study was presented in Chapter X dealing with evaluation. Chapter XI will treat the student largely as an individual and attempt to determine how he fits into the program or how the program may be made to fit him.

Eckert, of the University of Minnesota, has directed an extensive study of the student in general education. As she points out, "We are coming to realize more and more that the students themselves are the test of any educational system."<sup>1</sup> Furthermore, no full treatment of the program of general education is complete without consideration of those for whom the educational endeavor has been established.

Even as the evaluation of the program represents a complete research in itself, so the study of the student in the general education program at the Oklahoma State Colleges could represent another study.

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<sup>1</sup>Ruth E. Eckert, Outcomes of General Education—An Appraisal of the General College Program (Minneapolis: The University of Minnesota Press, 1943), p. 13.

However, this dissertation is limited to a discussion of the students in science courses in the general education program. An attempt will be made to cover the placement of the student according to his abilities and educational interests, his participation in the program, and his attitudes toward science in general education. Further consideration is given to the extent to which the goals of science in general education have been reached by these students.

### Student Placement

It is generally accepted by many educators that there is a high correlation between the maximum accomplishment of the student and his placement in the proper courses. There are several ways by which placement may be made. Students may be placed by examinations which reveal adequate knowledge of subject matter by virtue of previous courses, by tests showing mental abilities, or by advisement because of their planned course of study.

### According to Abilities

Writers referring to science in general education, repeatedly comment on the difficulty encountered in teaching students of varying abilities and divergent backgrounds. However, a reference coming from a school that has since discontinued the plan of placement according to abilities points out the weaknesses in such a program:

If the student made a good placement grade on the physical science entrance test, he was given the privilege of substituting the introductory course of his science major. The right to exercise this privilege, although made available only to a minority, had the effect of labeling the comprehensive course as preliminary and of branding it

as unnecessary except for inferior minds.<sup>2</sup>

Three questions were directed to the deans and teachers to discover just what was being offered in the Oklahoma colleges in regard to the testing and placement of students in science in the general education program. Numbers 124 through 126 ask, "Are the results of group tests and other placement data made available to the teachers?" "Are any provisions made for placing students in classes according to test results? According to past experiences or classes?" "What, specifically, is the program of placement into sections?"

In the Oklahoma State Colleges no program of placement testing existed for students entering the general education science courses. In each college, freshman examinations included a section on science. However, no school used the results from such testing for placement. Without exception, those interviewed had access to the test results. Few commented further; however, one said, "They are available if we take time to look at them, but, in general, I do not." Another teacher liked to look at the test results "so I can have some idea what to expect of the students." Three teachers and one dean expressed the opinion that some placement program would be desirable. Several pointed out the fact that students who scored low on the English section of freshman tests were required to enroll in remedial courses; and some of the colleges sectioned freshman mathematics students according to the results of these tests, showing that a placement program was active in at least two areas.

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<sup>2</sup>L. W. Gaddum, W. W. Ehrmann, and others, "The Comprehensive Science Courses at the University of Florida," Science in General Education, ed. Earl J. McGrath (Dubuque: Wm. C. Brown Co., 1948), p. 223.

### Possible Exemptions from General Education Courses

One of the most controversial issues in the science division involves the matter of who should take the general course in science and who should be exempt. A report from a conference on general education brings up this same point:

Another bone of contention in the science curriculum has to do with a student's previous training in science. More and more institutions permit students to skip those areas in which they demonstrate proficiency through an examination.<sup>3</sup>

In order to deal with just such a problem, question 108 was presented to the presidents, deans and teachers. It states, "It is the practice in some schools to exempt from the general education courses those who can pass advanced standing examinations. Is this a good idea?" Of the Oklahoma educators who expressed an opinion, eleven thought such a practice of exemption was a good idea while twenty-three would allow no exemptions on this basis. Three admitted it might work out in some cases, depending on the examination and the individual.

Those who would require the general courses in science for everyone gave various reasons for this stand. One said, "I think a student could take the same general biology course in each state college, and from the different approach taken by instruction he would get something new each time to strengthen his basic concept." Another said, "I seriously doubt if we could trust a standardized examination to justify us in permitting someone to skip the general education experience." This same teacher added, "Skipping educational experience is never valid." One

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<sup>3</sup>Claude E. Hawley, Curriculum Problems in General Education, A speech to The Conference on Higher Education, The University of Oklahoma, Norman, Oklahoma, March 27, 1950, p. 14 (mimeographed, personal copy).

pointed out that astronomy, at least, would be lacking in the specialized courses, while another went further with the statement, saying, "Exempting a student from general education courses implies that it is designed for those who do not know subject matter, which is not the basic function of general education." A dean gave a similar opinion saying, "I am wondering if we don't stress something in general education that the student will get by 'rubbing shoulders' in that class that he didn't have and will not get just because he passed a factual examination?" He would exempt no student from the general courses.

Another dean said it would have to be a "very, very, rare case in which exemption from the general courses could be justified for a student." Showing concern for individual growth, a teacher said, "There is an opportunity in the general courses for the student to grow day by day, and just because he can pass an examination from his high school subject he should not be exempt from general education." The others who were not in favor of exempting students from the general courses on the basis of examination merely stated that they did not think it was a good idea.

Those taking the opposite view ranged from the very emphatic to those who merely thought it might work to exempt or place students according to test results. Perhaps the strongest statement was made by a president. He said, "Yes, sir! I think one of the great criticisms of a college education today is that we put together those who are most able and those who cannot, and I say, if a boy can pass an examination, give him credit in it and let him go on!" The dean from that same college agreed, saying a student who could pass an advanced examination "should be allowed to go on to more advanced courses." A teacher reasoned that "the student



could probably take a course that is more valuable than the general course in science."

Mentioning the duplication of the material learned in high school, another teacher would exempt the student who could pass the examination because, "If he already has that information, attitude, and appreciation, then there would be no need for repeating it here." Another said, I see no reason for requiring one student to know more than another with less or the same credit." He favored exempting the abler student. Still another stated, "If the tests show that the student has had access in any way to similar courses, he should be exempt." A biology teacher said, "If we had a good test, I am sure we could find some students who could by-pass general biology, at least." Another would exempt those "who have a good introduction from high school" from the general courses. Two persons approved exemption from the general courses providing the student is required to take beginning physics or chemistry. The others went no further than an approval of the idea.

#### Advantages of Science Courses in General Education

Seemingly, almost every writer who deals with science in the general education program to any appreciable degree has a definite opinion on the matter of science majors in the general courses. B. Lamar Johnson is one who believes that "all students need the contributions which science can make to their education."<sup>4</sup> In a school at which this philosophy

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<sup>4</sup>B. Lamar Johnson, General Education in Action (Washington, D.C.: American Council on Education, 1952), p. 204.

prevails they take the view that,

. . . if the approach to an area of study designed for the general student is valid in a general education program, it should also be valid as an approach to the study of specific fields incorporated in the broad area. In other words that which is good for the general student should also be good for the specialist.<sup>5</sup>

The Harvard Committee also takes a stand on the issue. Its report says, "A general education in science needs to be provided for the future scientist or technologist as well as for the general student, . . . One could scarcely insist that all students of history or literature should learn some biology, for example, but that the prospective physicist or chemist need not do so."<sup>6</sup>

An opposing view is taken by a writer who discusses the wasteful duplication when a science teacher in a specialized area must repeat certain blocks of material because it was treated inadequately in the general courses. He says this can be prevented "by excusing science concentrators from any required science courses in general education, on the plea that their specialized requirements are already a burden."<sup>7</sup>

Two questions to the deans and teachers in the Oklahoma schools led into a discussion of this matter. Number 132 asks, "Would there be any benefits accruing to the student who is now excused from general sci-

<sup>5</sup> J. Paul Reynolds, "Articulation of General Education Science Courses with Advanced Science Courses—Florida State University," College and University Bulletin, IX (February-March, 1957), 3.

<sup>6</sup> Harvard Committee, General Education in a Free Society: Report of the Harvard Committee (Cambridge: Harvard University Press, 1945), p. 221.

<sup>7</sup> Arnold Arons, "Articulation of General Education Science Courses with Advanced Science Courses—Amherst College," College and University Bulletin, IX (February-March, 1957), 1.

ence courses if he should take general education science?" Making the same thought more specific question 133 asks, "Would you recommend that he take these courses?" It should be pointed out here that, although practice varied some with the school, the science major usually was taking the beginning courses in his field and being exempted from the general courses in science. Physical education majors were taking anatomy and physiology instead of biology, and the home economics majors were taking chemistry. The pre-professionals were all taking the beginning courses in the science area required for their field. So many students fell into one of these categories that an examination of a schedule for the fall term of 1957 at one of the Oklahoma State Colleges showed that there were more sections of non-general science courses scheduled than there are for general education science.

Surprisingly, considering the wide-spread practice that allowed so many students to omit the general courses in science, fourteen of those interviewed favored requiring the general education courses for all students while only eleven would uphold the status quo. The others on the interview list either declined to comment or had not given the matter enough thought to take a definite stand. One teacher made a statement typical of many and showing little sympathy with the aims of general education. He said, "If a person is going to teach general science in the grades or junior high school, I recommend he take the general courses; but, if he is going into a profession or into industry, the course is practically worthless!" Five more, although using expressions less strong, remarked that the science specialist, in particular, could benefit more from taking an extra semester in his field. The others who

would not change the existing practice merely stated that they did not see any benefits to a science major from the general education courses. None mentioned the science curriculum set up for the home economics and physical education majors. A probable reason for this is that the teachers interviewed held degrees in science, and their primary concern naturally rested with the science major.

Integrated knowledge of the sciences was mentioned by three persons who would recommend the general education courses for all students. One stated the matter clearly, saying, "Sometimes our majors who do not take the general courses come out without having as much integration as they should have." Another said, "I was in graduate school before I began to look at the integration aspects of the courses." A third would offer the general courses after the specialized training to give the student the "proper integration." Looking at the broader aspects, another teacher remarked, "If we stick with our definition of general education and if we are sure these courses are being offered as such, I would recommend them for all students."

One teacher looked to the general courses in science as supplementing high school learning. He said, "Even our science majors can benefit a great deal from that re-orientation they get in our general education courses." He added, "It clears up a lot of hazy concepts from high school." From another school, a teacher said, "We recommend that our biology majors take the general course first." Another teacher said, "If the general course is the kind it should be, then I would not excuse anyone from taking it." A dean commented, "We let a student go ahead to specialization if he wants to, but I think it may be a mistake." The

others did not enlarge to any degree on their expressed opinions that the general education courses should be for everyone.

### Role of the Student

Having just studied the placement of students in the general courses in science in the Oklahoma State Colleges, a closer look at the student himself follows. Because any effective learning must be based on an acceptance of the program by the student, it is desirable to know his attitude toward the general courses.

### Attitudes toward the General Courses

Questions 129, 130, and 131 which ask of the deans and the teachers: "How do students view the taking of general science courses?" What estimated per cent of the students accept the program with enthusiasm? Are passive? Antagonistic?" "Is there resentment because of delay in taking specialized courses?" Information for this must, in this study, come through the teachers. Participation by the student was also of concern here, both with respect to the opportunity given him by the instructor, and the extent to which he wished to cooperate in the learning activities.

A study that included interviews with 85 students in groups of three to six persons on each of seven different campuses outside Oklahoma showed a wide-spread favorable attitude toward general education. Dressel reports:

The value of general education as seen by students included: (1) general informational and cultural value, (2) opening up of new interests, (3) a perspective on society. Numerous students indicated a change in majors resulting from general education course experience. Increased ability in serious conversation and in ability to think were

often noted as specific values. Even vocationally oriented students saw a contribution to the broader aspects of their chosen vocation.<sup>8</sup>

Dressel and Mayhew participated in a similar study in which "students indicated by their responsiveness an awareness of the nature of general education and gave some evidence that it was a topic of interest in student 'bull sessions.'"<sup>9</sup>

Three principal values of general education were noted by this group:

- (1) The general informational and cultural value; (2) the practical value in that general education courses tend to be more closely related to life problems; and (3) the orientational value including (a) the opening up of new areas of interests (b) aid in choice of major and vocation (c) provision of a perspective on society and on one's chosen vocation.<sup>10</sup>

A reference which reports a favorable opinion from the freshmen at one school says, "Apparently our students want the broad type of training we try to give them through our program of general education."<sup>11</sup> However, other studies also pointed up some weaknesses of the program. Typical of these are:

- (1) Lack of individualization and adjustment to student backgrounds;
- (2) need for more emphasis on principles and thought processes, less on sheer coverage;
- (3) failure to explain adequately to freshmen, who

<sup>8</sup>Paul L. Dressel, "General Education as Viewed by Students," College and University Bulletin, VI (May, 1954), 4.

<sup>9</sup>Paul L. Dressel and Lewis B. Mayhew, Directors, General Education: Explorations in Evaluation (Washington, D.C.: American Council on Education, 1954), p. 257.

<sup>10</sup>Ibid.

<sup>11</sup>W. Hugh Stickler, "The Students We Teach," General Education: A University Program in Action, eds. W. Hugh Stickler, James Paul Stoakes, and Louis Shores (Dubuque: Wm. C. Brown Co., 1950), p. 82.

frequently resent the requirement, the nature of and need for general education; (4) tendency to assign less able teachers to general education courses; (5) need for more inter-relationship but less actual duplication among courses; (6) need for exemption or credit examinations for able students who are often not challenged by the courses. Students indicated that their general education classes were usually larger than other classes and felt that this was the source of many of the weaknesses.<sup>12</sup>

The previous evaluations were of the entire general education program. The next investigation is of student views concerning the science program in the Oklahoma State Colleges. One frequently mentioned attitude was a fear of the science courses. A teacher said, "Most people dread to get into science and it rather frightens them." He added that it is a challenge to the teacher to overcome that fear. Another said much the same thing. "The students fear science, but after the first course their attitudes change, and many go on and take more science than they had planned." Still another pointed to the same attitude. He said, "Too many of the students are scared to death of science, but by the end of the term they decide it is not so bad after all." Putting it briefly, another teacher said, "Most students dread science, fear it, and avoid it."

Probably the most common attitude reported was from the students who took the science courses in general education because they were required. Two teachers said the students regard the course as a "necessary evil"; two more said their students felt it was "a chore." One said, "The majority take it because they have to." Another said, "They look on it as a requirement." Two believed that if the students had a choice they would not take the courses. One teacher was concerned with student apathy.

<sup>12</sup>Dressel, op. cit., p. 4.

He said, "Many of them say, 'Well, here we are, what have you got?'" He added that "some of them don't even care." Much the same thought was brought out by another teacher who said, "I sometimes wonder whether they should even be in there if they just take the course because they have to."

One person said, "Some of the students question the value of the course." Another believed, "They begin with a poor attitude, but end well." A similar statement was made by a teacher who said, "They have some aversion to the course at first, and some keep it right up to the end; however, others become interested." A dean said, "There is not too much enthusiasm on the part of a large number, according to the reports I hear." A teacher remarked on the lack of enthusiasm, while another said, "They just take it in stride and go ahead." Three used the word "reluctant" to describe student attitude.

No single person among those interviewed mentioned that the students looked with anticipation toward the science courses in general education. Some, however, made milder statements than those previously listed. One said, "We have practically no objections." Another said, "They seem to enjoy a part of it." "We have very few complaints," was an attitude given by a dean. A teacher said, "Most of them do not take it adversely. They make the best of the situation."

It should be pointed out here that for several reasons the surveys quoted earlier in this section show a great variation from the attitudes reported by the interviewees. First, the interviewees were all science specialists and discussed only those students in the general courses in science, while the writers were discussing students in the



over-all program of general education. Second, there had never been a complete study of student opinion of general education in the Oklahoma State Colleges. Attitudes, then, were through the eyes of the teachers. And third, the surveys which the writers recorded were done by questionnaires which allowed the student to choose among values received from general education courses rather than being judged by their classroom attitude.

To get a clearer picture of student attitude from the respondents, the teachers and deans were asked to give an estimate of the percentage of students who accepted the program with enthusiasm, were passive, or antagonistic. Their answers, to a great extent, followed the same pattern as their previous diagnosis. Most preferred to discuss the matter along with the estimate. Many again pointed out that the students' attitudes were many and varied, changing during the term, but that the largest percentage were passive.

Several of those interviewed found it difficult to evaluate attitudes. One said, "It is pretty hard to evaluate on expressions when they all sit here with a dead-pan look." He added, "Maybe 10 or 15 per cent appear enthusiastic. The majority don't seem to care much one way or the other. Some complain about the general courses, but few are really antagonistic." Much the same thought was expressed by another teacher who said, "We would be lucky if 20 per cent were enthusiastic, but not many are really antagonistic, either." One teacher thought no one was particularly antagonistic, about 30 per cent were passive, and the others "accept it pretty well." He went on to explain how he would account for the attitude of some. He said, "If there is any resentment, it is on the part

of the ones who are looking for snap courses and who resent a course in which they have to learn something." He added, "We are old-fashioned and think the students should know something when they have finished." A dean gave another reason for unfavorable student attitudes to the general courses. He said, "Unfortunately, the inadequate high school background of so many students influences attitudes."

Some were more optimistic about the attitude of their students. One said that 80 per cent were enthusiastic, 19 per cent were passive, and only 1 per cent antagonistic. Another teacher said, "Probably 95 per cent accept general science courses with enthusiasm and only about 5 per cent are antagonistic." Still another stated that 75 per cent of his students were enthusiastic and less than 10 per cent antagonistic. A dean estimated that at least 95 per cent were enthusiastic, with none antagonistic. "A very minor per cent are actually resentful," said a teacher, "but they find that science is not such a 'boogieman' when they come to understand what it is all about." Giving the percentages as 60 per cent enthusiastic, 35 per cent passive, and 5 per cent antagonistic, a teacher said, "Those who are antagonistic to the program are also antagonistic in any program, because some people just don't want to go to school, that's all." He added that many of the physics and chemistry majors wanted to take the general courses in science.

Still another said, "The passive group is pronounced, the enthusiastic are in the minority." One of the least optimistic said, "10 per cent are passive and at least 70 per cent are antagonistic." With the statement, "There is a good bit of indifference," one teacher places 5 to 10 per cent in the enthusiastic group, the majority in the passive

group, and about 10 per cent as "resisting" the courses. Using the word "enjoy" rather than enthusiasm, one said, "Some are antagonistic, but the majority enjoy the courses." Another pointed to the growth of enthusiasm as the course develops. He said, "Quite a few more leave the course more enthusiastic than when they entered it; a few may be irritated, but I would not call them resentful."

Seeking a reason for any antagonism the student might have against the general courses, the interviewees were asked to comment on any student resentment due to a delay in taking specialized courses. Their answers brought out the fact that the program of advisement at the time of the study allowed, and often encouraged, the students to take one or more courses in their major field during the freshman and sophomore years. Only one of those interviewed could see any resentment in this plan. He said, "Many students seem to be discouraged because they cannot start on their specialized courses when they are freshmen and sophomores. He added, "Good advisement would remedy this." Though seemingly a charge against the advisers in the school, all other teachers in that institution were aware that the specialized courses could be worked in with general education. This would indicate a lack of awareness on the part of this teacher of the policy of the schools and the practice that goes on around him. Omitting his statement, then, it is reasonable to conclude that there is no resentment from students in the Oklahoma State Colleges because of delay in specialization. A delay, as such, does not exist.

#### Student Participation

There is a difference of opinion on the amount of student partici-

pation possible in planning the educational program and the individual classroom activities. An educator and writer says:

. . . student participation in program planning is not common. . . . The greater part of student participation in planning activities has been in extra-curricular fields, with little relationship to educational outcomes. More effort should be expended in directing student participatory action towards basic issues of program evaluation and modification rather than, as now, to superficial questions concerning aspects of school discipline.<sup>13</sup>

A study recorded by another writer on student views of general education is that "students . . . protested the lack of opportunity to contribute to the planning of general education."<sup>14</sup>

Another statement, made as the result of visits to 64 general education classes on six different campuses, is that "students are typically given little opportunity for participation in planning or even in discussion. Teachers talk most of the time."<sup>15</sup> As to the matter of allowing student interests to guide the program, these same writers charge that "a common reply to a student question was that time simply would not permit going into that phase of the subject."<sup>16</sup> One writer, seeing the possibilities for student participation in planning the program, nevertheless recognizes the difficulties inherent in such an endeavor:

The rapid turnover in composition of a typical student body poses the problem of orienting and assimilating many new participants each year. Delegation of responsibility lies with the president or faculty.

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<sup>13</sup>David R. Dunigan, S.J., "Student Participation in Program Planning," Current Issues in Higher Education, 1956: Resources for Higher Education, ed. G. Kerry Smith (Washington, D.C.: Association for Higher Education, 1956), p. 77.

<sup>14</sup>Dressel, op. cit., p. 4.

<sup>15</sup>Dressel and Mayhew, op. cit., p. 256.

<sup>16</sup>Ibid.

The student does not have the degree of technical knowledge or maturity which faculty have . . . for this reason the validity of the student's participation could rest on his knowledge of campus conditions and needs.<sup>17</sup>

The writer goes on to point out what he considers the criteria for success:

The success of student participation will depend in great measure on what the other members of the educational community expect of the student. If they fail to see him as anything more than a prom-happy, study-dodging stereotype in white bucks, they will merely encourage him in patternless irresponsibility. If, however, the faculty and administration expect him to assume responsibility and to act in an adult manner, the student can be generally counted upon to respond with maturity and eagerness, to contribute to what he recognizes as a problem he shares with the rest of the educational community.<sup>18</sup>

The teachers in the Oklahoma colleges were asked question number 127, "To what extent is the student permitted to assist in the selection, planning, and appraisal of his class activities?" Six persons used the phrase "very little" in answering. One added, "We use a text book that covers the field." Another explained that lack of student participation was "due to large classes." Eight teachers gave "none" in answer to the question. One of these could see that "things are not as they should be," another added, "We generally just hand it down to him."

More comprehensive answers were given by several. Explaining why the student has little to do with planning, a teacher said, "I am not sure the student knows enough about the course to do much planning." Another recognized the need for student participation, but said, "Most of

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<sup>17</sup>Ray Farabee, "Program Planning: Student Participation as Revealed in the National Student Association Survey," Current Issues in Higher Education, 1956: Resources for Higher Education, ed. G. Kerry Smith (Washington, D.C.: Association for Higher Education, 1956), pp. 75-76.

<sup>18</sup>Ibid., p. 76.

them do not have any idea of what they are doing." He added, "Some have expressed this semester the desire to go into this or that, but it would not fit into the sequence of things and I had to put them off."

Lack of response to the opportunity to participate was given by one teacher as the reason for so little being done. He said, "I have not noticed any of them wanting to take a particular part." He went on to say, "I try to stimulate thinking, to raise questions, and give them all the opportunity in the world, but college students just do not respond." Another teacher pointed to this same problem. He said, "They could have a good deal of freedom, but I find that students are hesitant to offer any suggestions." He added, "I try to get them to ask questions and bring out the things they would like to have discussed, but I get very little response."

Discussion was thought to provide opportunity for student participation by five teachers. One said, "We discuss various subject matter fields and the student, through his questions, can extend a discussion into several class periods where we may have planned only one." He added, "That takes care of student interests just as well as permitting him to plan something that he might not be familiar enough with to be able to intelligently plan the work, as such." A second said, "We do not let them say that they would like to have this or that portion—I don't know whether you could get them to do it at this level—but we do throw the class open for discussions." A third teacher stated, "Student participation is somewhat limited, although occasionally I ask for a class attitude about something." The other two teachers said, "We have a question period," and "The students direct the discussion."

Toward Reaching the Goals of Science  
in General Education

In evaluating the program of science in general education in terms of the student's needs, the focus is once more on the outcomes of some of the most-mentioned objectives of the courses. Three questions were designed to elicit this information as far as could be determined from the teachers of science in the Oklahoma State Colleges. Question number 110 asks "As you view your experience as a teacher of general education, do you feel that students leaving your classes will be better able to approach their problems with critical reasoning?" Communication as an outcome questioned in number 111: "Do you think the students after finishing the course will have made significant advance toward being able to read and listen intelligently in this area?" The third question of this series, number 112, asks, "Do you feel that the students will have developed the will and the habit of reading for pleasure and self-improvement materials which relate to your teaching area?"

The Acquisition of Critical Reasoning

Pointing out again the importance of analytical reasoning as an outcome for which we should look, a writer gives his opinion:

Since the beginning of the science in general education movement, considerable attention has been given to the contribution of science instruction for promoting thinking and reasoning as an outcome of such instruction. Although some disagreement has occurred regarding whether there is such a thing as scientific thinking as a definite and explicit process, agreement does exist that several of the kinds of thinking and methods employed by scientists are of sufficient general application that they should be encouraged as an objective of science instruction for general education.<sup>19</sup>

<sup>19</sup>Louis M. Heil, "General Education: Natural Sciences," Current Issues in Higher Education, 1956: Resources for Higher Education, ed.

Another writer, discussing the value of the "scientific attitude," questions, "Of what value to the citizen is such an attitude; however, even if it can be acquired, it stops with scientific phenomena, with which he may be little concerned in his post-college life?"<sup>20</sup>

Rogers closes his term with blessings to the students of his science courses. He says in part:

Keep an understanding of science itself. If at some future time when you are a business head or mayor of a town, or what you will, you are faced by some problem and you weed out prejudice and humbug and say, "Let's experiment," or, "Let's review reliable tests," or "Let's consult a qualified expert," the course will have been worthwhile.<sup>21</sup>

In answer to the question regarding the students leaving the general courses in science with greater ability to reason critically, eleven teachers believed they had gained in this direction; eleven others used the word "hope" as a less positive answer. Of those who answered in the affirmative, few made further remarks. However, one said, "Evidence of critical reasoning has come up in class several times." Two added that this ability was one of their primary objectives. Another said, "If not, then I have made a failure of my class."

From those who "hoped" to have instilled the ability to do critical reasoning, we find one explaining that this "depends on the student's

G. Kerry Smith (Washington, D.C.: Association for Higher Education, 1956), pp. 220-21.

<sup>20</sup>Sidney French and Merrill P. Rassweiler, "The Physical Sciences," General Education in Transition—A Look Ahead, ed. H. T. Morse (Minneapolis: The University of Minnesota Press, 1951), p. 180.

<sup>21</sup>Eric M. Rogers, "The Good Name of Science," Accent on Teaching—Experiments in General Education, ed. Sidney J. French (New York: Harper and Brothers, 1954), p. 183.



attitude and how he meets life." He added, "Some will profit, others will not." One said, "We hope that everyday situations will be understood a little better by having had biology." Another said, "They should be in condition to do critical reasoning." Still another said, "You could probably tell the difference between those who have had the course and those who have not." Taking a different point of view of the values of critical reasoning, another biology teacher remarked, "Though we do not teach any symptoms of diseases, two or three students after having studied the endocrine system, recognized hyper-thyroidism and are going to have a check up to find out." A physics teacher interpreted critical reasoning in terms of his own area. He said, "They will have a little better knowledge of physics, itself, and at least they will know what the term physics means."

One teacher felt very strongly that the development of critical reasoning "is one of the basic problems of all education." He went on to say, "Somewhere along the line intellectual curiosity has been killed; but when they come to us with a 'so what' attitude we try to replace it with curiosity—to teach them to actually think and evaluate various facts and masses of data." Curiosity was mentioned by another teacher. He said, "After having the general courses in science, at least they are going to be more curious about things around them and will perhaps have to reason a little bit."

A few persons doubted the success of the general courses in developing critical reasoning. One said, "To be honest, I doubt if he gets the kind of training to make him really discerning in a scientific way." Another expressed doubt "that the students have changed very much." "But

at least," he added, "they have been exposed to the need for analytical reasoning." Using the word "doubt" again, another teacher said, "I doubt if we have helped, maybe a little is all." Yet another said, "I am not so sure. You have touched a sore spot." He added, "If they are not able to reason any better than they read, they will not be able to do much."

#### Development in Communications in Science for Present and Future Needs

Dressel and Mayhew point out the importance of the ability to read science articles:

The ability to read current science materials is an important outcome of a general education science course. Even so, the ability in itself is insufficient; unless the ability is used, nothing of permanent value remains. The individual who does read and evaluate science materials is constantly enhancing his education, and he is also able to function more intelligently as a citizen in the ever-expanding sphere of interaction of science and other disciplines.<sup>22</sup>

This quotation serves to express the areas relating to communication on which the interviewees were asked to comment. It combines the ability to read with the development of habits of reading. Carrying the idea a little further, French would tell his students, "If in later years you occasionally read science, popular or technical, and enjoy reading it and discussing it with scientists, if you can enjoy meeting scientists eye to eye, then we have indeed done well, you and I."<sup>23</sup>

The teachers in the Oklahoma colleges were asked for their views on whether their students had learned to read and listen intelligently in the science areas and if they had developed the habit of reading for

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<sup>22</sup>Dressel and Mayhew, op. cit., pp. 104-105.

<sup>23</sup>Rogers, op. cit., p. 183.

pleasure and self-improvement. Considering the first condition, that of developing the ability, only one teacher thought this need was not being met in his class. He said, "They do not learn that from us." He explained further, "We list outside readings but don't emphasize it enough and few students take advantage of it."

Possibly most persons answered in the affirmative because the question was worded to include any advance in this ability. However, there were varying degrees of thought on the matter. One said, "At least they will be able to enjoy their radio and television programs more effectively after having this course." Two teachers mentioned the articles their students brought to class as proof of this reading ability and interest. One said, "The biggest difficulty in our courses is building four different vocabularies; in doing so, the student certainly widens his reading ability." All others merely answered the questions with a "yes" and "I hope so."

As we advanced to the next question for discussion—the possibility that students will develop the habit of reading for pleasure and self-improvement—many more teachers doubted this outcome as a result of their general education courses in science. One said, "It depends upon the individual; however, most students tend to relax when tests are over." Another said, "If he didn't have the habit before, he won't have it at the end of the course." He added, "If they were students by nature we might enhance and arouse interest." Expressing hope that he had accomplished this feat, another teacher said, "This is questionable, but I sincerely hope so."

Showing more optimism, one said, "Early in class, even, they bring

in clippings, indicating interest." Another said, "One of the main things they get out of the course is that they will read an article in the newspaper that heretofore they would have skipped." Citing interest again as a result of the general courses, another said, "They are not likely to do extensive reading, but they will be more interested in news releases or short articles on science."

Less positive answers were given by several teachers. "I hope they will continue to read, but I don't know whether they will or not," was one opinion. Another said, "That is what I hope to accomplish." Four more felt that some students would continue to read and some would not, depending on the individual student and his native ability. Within the answers to the specific question, four teachers brought out the fact that the general courses stimulate the interest of some students to the point of deciding to major in science. One of these said, "At least two or three students each semester change over to science."

#### Summary

In the Oklahoma State Colleges there is no system for sectioning students in general education sciences according to ability, knowledge of subject matter, or successful completion of high school courses. Indirectly a grouping according to ability and interests does take place because there are so many exceptions to the requirement for taking general education courses in science. These exceptions include such groups as pre-professional and majors in science.

Even though this practice of substitutions does exist, a majority of those interviewed believe that general courses in science do have value

for the student regardless of the direction he will take in his professional career. These advantages lie largely in obtaining an integrated view of science, both as the areas relate to each other and to the problem of society in general.

Students tend to reflect the attitude of the instructor concerning the value and place of science in general education. Resentment because of having to take the courses is at a minimum. This includes adverse attitudes toward science and the impression that their ultimate goal is placed farther away because of the time required in these courses.

Students as a whole enter into the study of science with fear. Many believe it belongs to the realm of mystery into which they cannot enter. The good instructor is able to dispel this attitude and lead the student to participation in a rich and rewarding learning experience. A direct result is the development of enough of the language of science to satisfy the ordinary needs of the citizen. Growing with the ability to communicate in the area of science is the development of critical and rational reasoning, which is both one of the greater needs of the student and the coveted goal of general education.

## CHAPTER XII

### RECAPITULATION AND PROPOSALS

This, the last chapter, has four purposes. As a recapitulation it looks briefly to a review of the problem and a summarization of the results of the study. The third part covers proposals which have developed through the analysis of the data gathered. The last paragraphs go beyond the analysis of information obtained to give a few impressions or observations of the writer.

A systematic consideration of organization within the chapter seems to indicate a separation of the summary of findings and the analysis of this information, yet throughout the dissertation these have developed concurrently. Although they have been divided to some degree, a complete separation at this point would result in a more disjointed presentation than seems desirable.

#### Resume of the Problem

The problem of the dissertation is a study of science in general education in the six Oklahoma State Colleges as it had progressed in the five years following its official beginning in 1951-52. It considers the conditions which existed and the needs for the future. The study is based upon opinions expressed by administrators and teachers of science in the institutions included.

To review briefly the scope and limitations established, attention is directed to several conditions. It has not been the purpose to evaluate the program of science in general education from measurable changes in the students completing these courses.

The problem is further limited by the connotation of the term "general education." It does not refer to survey courses of subject matter, nor to liberal education in the usual sense, although many of the goals established for these are common to general education. The most significant distinction is the quality of experience gained by the student. To ascertain this it is important to know how he is being taught as well as to know what he is learning.

The study, within its limitations, becomes a careful survey of the opinions and attitudes of those directly concerned with the program. The instrument used to gather information for this is in the form of questions, which were asked of the interviewees. Their oral responses were recorded by means of a magnetic tape recorder. The answers were reduced to the essential thoughts contained and arranged according to the ideas presented. These organized answers to the questions, as they compared to those found in published articles on general education, became the material used in the study.

### Summary

#### Fundamental Understanding of General Education

An over-all consideration of the answers given by the interviewees concerning the definition and objectives of general education yields little indication of depth with respect to a philosophy. A small minority

had attempted to establish a statement of beliefs concerning general education against which they might evaluate their practices relative to the movement, but some stated they had no philosophy or had not given the matter enough thought to permit the statement of a clear answer.

Although a critical consideration of definitions and objectives stated by the interviewees revealed lack of understanding of the program on the part of some individuals, the replies were such that a sound and comprehensive definition and statement of aims sought could be compiled from them. To a lesser degree the same may be said of a statement of beliefs concerning the movement. Few had as yet established a set of convictions having the strength and depth to serve as firm guides for the conduct of the program.

The teachers of science had a clearer idea of the role of science in general education than they did of the whole program, yet most of the answers concerning the role did not indicate an awareness of the distinction between role and objectives. There were so many ideas concerning the place of science in general education and so many different versions of the means of establishing it in its place that no single purpose stood significantly at the front.

#### Problems Connected with the Program

The problems found in a program of liberal education also find some roots in general education in spite of the assumption that the new program began as an attempt to overcome some of the weaknesses of liberal education. The newness of the program accentuated the problem of wise choice of course content. A part of this was the result of the inability



of various groups and individuals to reach more than a generalized agreement on the goals of the movement.

The obtaining of teachers who are prepared to teach science courses in general education and who are in agreement with the principles of the movement represented the greatest single problem of carrying on a successful program. It is significant that with only two exceptions the teachers available were specialists in some relatively limited area of science. Other problems were common to all education.

### Curriculum

For the most part, text books which were selected by the teachers guided the development of the courses. Biology departments, to some extent, used a syllabus to guide study. Each school required four college hours of credit in both general physical science and general biology. They also provided for exemptions from these courses for those majoring in science, physical education, home economics, and engineering. More than half of those interviewed were not favorable toward these exceptions; however, the practice continues.

It was also discovered that none of the selected Oklahoma colleges included a laboratory experience in connection with the general courses. Large classes and heavy teaching loads seemed to be the principal reasons for this omission. A few felt that visual aids, to an extent, had replaced the laboratory; however, most did not. They would prefer to use visual aids and demonstrations as a supplement to the laboratory, not as a replacement.

Also of concern in this area was the need for more hours in

science to cover adequately the rapidly increasing knowledge in the field. Few, however, would require more science at the expense of other areas. They could especially see a need for humanities. A dean who showed great enthusiasm for general education throughout the interview would like to see an increase in the number of hours required for a degree in order that more general education might be offered. Taking the other view were those who would eliminate the general courses to facilitate earlier specialization. Among these were administrative persons in two different institutions who saw the program as a stumbling block.

#### Evaluation of the Program and its Outcomes

Evaluation of the program of science in general education and of the outcomes with respect to the student had not been handled as an organized project by any institution included in the study. Most of the opinions were subjective and tended to reflect the attitude of the individual interviewee toward the program. The general opinion was that the program, as it is considered here, was still too new to permit a significant evaluation, especially as it benefited the student.

#### Concluding Questions and Follow-up

The last eight questions were included in the interview to bring out any additional information needed for the summary and analysis. Nothing new was discovered from the replies to them; however, they did serve to confirm and strengthen previous answers. There was a consistency on the part of the interviewees with respect to responses given to the concluding questions and those of the rest of the interview.

In addition to these questions a follow-up of the interviews was

made by letter to representative spokesmen at each of the institutions visited. This survey was made near the completion of the initial writing in the late fall of 1957. The purpose was to discover any significant changes that had occurred since the interview. In only one college was there a definite change. Except for education majors, this school now required only 36 college hours from the general education areas as compared to the previous 50 hours.

### Analysis

It would make for simplicity if, as a summary and analysis, it could be said that the data are conclusive and that definite recommendations might be based on them. Such a statement could take either of two roads. One of these would be that the science program in general education as developed in the Oklahoma State Colleges is of unquestionable value and is growing with time and experience. To such a conclusion very little could be added. The other avenue is the diametric opposite; namely, the program has no value and should be discontinued. The situation is much more complex than either of these two positions. To consider the full implications of the answers of the interviewees, one must keep in mind the philosophy and objectives of the program. The purpose of this study can only be achieved by an analysis of the existing situation as it compares to that which has some general acceptance.

### Implications of the Teachers' Concepts of the Program

As observed by way of summary, there is within the collective statements of definitions, objectives, and philosophies of the group the materials from which to build sound statements concerning these. The

student, however, does not face instructors as a group for his two courses of science in general education. Instead his knowledge of subject matter and of the purposes of general courses must come from one or two teachers. One must, it seems, recognize that for some students their course of science in general education will fall far short of its goals because of the shortcomings of instruction.

If it could be assumed that a lack of a philosophy concerning general education indicates open-mindedness on the part of the instructor, there is much hope for re-education leading to an understanding and enthusiasm for the program on the part of those who have not yet accepted the premise of a need for a form of general education not to be found in introductory liberal arts courses. Since these teachers who are not yet well founded in the principles of general education are also science specialists, one can only presume that their philosophy of science is being twisted to serve the general courses.

The bright side of the picture came from those who had developed an attitude favorable to general education or were concerned because of their lack of understanding. From this evidence it is possible to conclude that the specialist, if he is properly oriented, can maintain a philosophy favorable to the program without forfeiting any of his beliefs in the science disciplines.

#### Suggestions for the Future

A study of this type is of value only as it calls attention to needs and contributes to some workable answers, solutions, or changes in thinking. Most of the present attempts at general education are evidently

worthwhile. Students are learning to communicate better with one another, to read and listen and understand matters that concern science. Some are, no doubt, because of the way of thinking encouraged in the general sciences, and the acquisition of basic knowledge as a background, adopting a more critical and rational attitude toward politics, foreign policy, quack doctors, and false advertising. Others are certainly growing in cultural background and appreciation of the place of science in the modern world. All of the suggestions for the future grow from the problems observed and have as their foundation the bringing of more meaningful experiences into the life of the individual, especially in the area of science.

#### Studies within the Schools

Almost every school included in this study once had a study group for the purpose of reviewing and improving their general education program. At least one of these was organized on a continuing basis. One would not question that much good can come from these; however, within schools one or two teachers of science in education may have participated while many showed no knowledge that such studies existed. Clearly, as indicated by the greater understanding and sympathy of those who participated, the study groups are most valuable for those who are active. Groups or committees on general education were formed from volunteers. These were probably composed of individuals already quite well informed concerning general education. Findings from this study would indicate the need for wider participation in study groups by all of those teaching in the general education area. There should be small divisional or departmental groups and a larger committee representing all of general education whose

function would be largely that of integration of knowledge and effort among the areas.

#### Intercollegiate Efforts

At this time there is no cooperative program among these colleges for improving instruction in general education. Since the institutions concerned are functioning under the same general directive there should be some direct means by which those concerned might exchange ideas. An intervisitation plan would be helpful, and some means of bringing general education teachers together for at least an annual conference seems a necessity if the program as now organized is to improve on a statewide basis.

#### More Direct Administration

The strongest suggestion for the program of general education in the institutions considered is that they establish a system of more direct administration and supervision. The exact method by which this is done or the title of the person is not of first importance.

At present the deans of instruction have as one of their duties the administration of the general education program. In consideration of their many responsibilities they are doing a splendid job, but time does not permit any one of them to accomplish the more direct supervisory leadership needed. With not less than two-fifths of the student body enrolled in general education courses, it merits someone as coordinator who can make the promotion of the program, improvement of instruction, and integration of efforts his major responsibility.

### Evaluation of Outcomes in Terms of the Student

The program of general education in the Oklahoma State Colleges has not been in effect long enough to make an evaluation in terms of lasting benefits to the student; however, such a study is needed for the future. If the results of general education are not seen in the student and recognized by him after he has assumed his place in society, the logical assumption would be that general education is not effective in attaining its goals. Methods of correcting this condition would then need to be established.

### Impressions and Observations of the Writer

The program of general education had an auspicious start in the Oklahoma State Colleges, and the movement progressed to a place where it appeared to have gained a firm footing. There are indications that progress was arrested for a time. This is unfortunate because, placed under static conditions, a movement of this kind will almost surely retrogress.

There are some identifiable reasons for this slowing down of effort toward improvement. Accreditation is a part of the system of higher education which places an added burden on the teaching staff, for they must participate in self-studies, evaluations, and the writing of reports. This is not to discredit this practice but to point out that efforts in all of the institutions have at various times been concentrated upon preparation for the visit of an examining board which had little interest in the general education phase of the curriculum. This takes so much of the instructors' time that other studies and major efforts toward improvement must be set aside for a time.

### Administration

It also seems self-evident that the program of general education cannot reach its fullest and richest growth until someone at each institution becomes active in promoting the best interests of the program and has the authority to require meetings of the general education staff. A part of the duties would be to carry on some indoctrination of the teachers of general education subjects in the policies of the school relative to this area. Another responsibility would be to bring about a vertical and lateral integration of planning, study, and instruction.

### Status of Science in General Education

The stated and implied second-rate status given to science in general education must be improved. The greatest factor which contributes to this down grading lies in the fact that it cannot be accepted either as a part of the science requirements toward certification or as a part of the required hours on a science major.

The science area in the colleges concerned is the only one which in substance disowns and disavows its own. The English courses in general education and the social studies courses are not so limited.

The reason for the second-rate status of the general education courses is not too difficult to determine. They do not fit into the conventional pattern of major and minor areas of concentration. The direct argument is that there are already too few hours required for a major; therefore, general science courses cannot become a part of those selected.

A second reason, which is often obvious to all except those presenting the issue, lies in the competition for enrollment. This still



holds true even as complaints of heavy enrollments and understaffing are voiced. Teachers of first courses in science disciplines strive to increase enrollments often in disregard of needs and ability of the student. These see the general sciences as trespassing on their prerogatives.

This leads to another observation which cannot at this time be fully substantiated. The science areas probably get a higher percentage of their strong majors from those who have through their general courses found an interest and ability than from any other single source. By contrast the rigid discipline of pure science can eliminate immature students who, with the broadening and integrating experience of general sciences, might not only have found greater success in their beginning courses, but also have developed more of the qualities which lead to the kind of effort demanded by the sciences.

#### Laboratories in General Education

The program of science is penalized by not making possible a laboratory-demonstration experience for students. This needs to be different from the conventional laboratory and can with a little ingenuity be more meaningful and valuable to the student than that which often passes as a laboratory experience. The problems are many, but the results are surely worth the time, money, and effort needed to reduce them.

#### Conclusion

The writer is so near to the subject and so greatly concerned with its problems that it would require many pages to state the convictions which have grown with this study and to outline ideas for improving the program of general education in science. Two convictions do dominate the

thoughts concerning the movement. It is worthwhile and, because of this, it deserves every reasonable effort on the part of those working in the program to improve it and strengthen its position as a part of the system of higher education in the Oklahoma State Colleges.

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<sup>1</sup>The doctoral dissertations included in this bibliography are the result of a survey which sought to determine the extent of research related to science in general education. Harlow's study, An Inventory of Instructor's Judgments concerning Programs in General Education Science, was most closely related to this writer's dissertation, therefore it was read in its entirety. Others were selected after reading reviews and abstracts of them.



## APPENDIX I

### INTERVIEW GUIDE FORM

The "introductory discussion" to the "Interview Guide" sets forth for those interviewed the purpose and method of study, the questions to be asked, and the attitude of the questioner. The interviewee, having had this guide available for consideration a few days before the interview, was given the opportunity to prepare for the actual conference.

#### Guide for Interview

Introductory discussion. The Oklahoma State Colleges are completing five years of the program of General Education as recommended by the Intercollege Curriculum Committee and approved by the State Board of Regents of Oklahoma Colleges. The writer proposes to examine carefully the program of science in general education established by the committee, both as it has functioned and as it looks to the future.

There is in these questions which are to be asked no intent toward impertinent inquisitiveness relative to the conduct of your business. All answers will be held in confidence, all references being made in terms of characteristics of the situation, and no quotations being made without your permission. Feel free to refuse an answer to any question which you may believe has no part in the understanding and analysis of the program of general education in Oklahoma, as it applies to science. Please, also understand that only through free and open response can the strength and weaknesses of our program be revealed.

These questions, which I shall ask, may omit some of the things you think most significant. You are encouraged to make any additional comments at any time you see fit. Such comments may be of greater value than the direct answers to questions.

The questions of the interview are placed in your hands to give you preliminary insight into the information desired from your answers. The interview itself will be electronically recorded.

The questions are to be directed to the Presidents and Deans of the College, Science Department Chairmen, and Teachers of general physical or biological science. (The letters P, D, C, and T preceding the question will indicate to whom it is to be directed.)

### Definitions, Philosophy, Attitudes

PDCT - In your own words, how do you define general education? (1)

PDCT - Will you state the objectives which you consider most significant? (2)

PDCT - Going further than definitions, will you attempt to give a brief statement concerning your philosophy of general education? (3)

PDCT - Has your school or any department therein established and put into record a philosophy of general education other than that indicated in the catalog of the school? (4)

DCT - What is this philosophy, or where may a copy be obtained? (5)

PDCT - Is this considered a fixed guide, or is it emergent and conditioned by the practical aspects of establishing a curriculum? (6)

PDCT - If such a change in stated philosophy developed, how did it come about? (7)

PDCT - What in your opinion is the greatest problem in carrying on a program of general science education? (8)

PDCT - Have steps been taken to resolve or alleviate this problem? (9)

PDCT - What specifically are these steps? (10)

PDCT - Has the problem been solved successfully? (11)

PDCT - If no, do you feel that it is something which lends itself to solution? (12)

PDCT - If other than the problem above, what is the most crucial issue of general education? (13)

DCT - What do you see the role of science in general education to be? Is it more important than other subject matter areas? Because of our technological age, does it have greater significance than other branches of learning? (14)

T - What do you consider the most significant object of general science education? (15)

T - Would you, given a choice, elect as a part or all of your teaching load, to teach general education subjects? (16)

T - As a teacher of your specialty, do you feel that standard liberal arts prerequisites and beginning courses would have contributed as much to general education as the general science courses which take their place? (17)

#### General Problems of Administration and Supervision

PD - Is there in our state colleges a need for a dean or other administrative head of the general education program? (18)

PD - Do you feel that our state colleges are large enough to justify such a person? (19)

PDC - Do you feel that you have the support of your faculty (or staff) for your program of general education? (20)

PDC - To what degree would you estimate your faculty supports the program? (21)

PDC - What estimated percent of the staff have a philosophy of education which is compatible with the movement of general education? (22)

PDC - What percent, if any, of the staff are antagonistic to the program? (23)

PDC - What percent, if any, are indifferent? (24)

PDC - Do you consider this significant opposition? (25)

DC - Is there any opposition to the general education courses from teachers of science? (26)

PD - Are the departmental heads or chairmen lagging or leading the faculty in the conduct of the general education program? (27)

PDC - How many individual teachers do you estimate are doing outstanding work in the planning, organization, and conduct of the program? (28)

PD - In what departments will these persons be found? (29)

PD - In what way is their work outstanding? (30)

DC - Have you found the four-hour course for one semester to be satisfactory so far as scheduling the general science courses is concerned? (31)

DC - What do you think of the idea of offering a two-hour course in both general biology and physical science for thirty-six weeks, so scheduled that physical and biological science might be taken concurrently? (32)

### Courses, Integration

DCT - Has anything been done toward integrating the science courses with other subject matter areas; e.g., philosophy as presented in the humanities or geography in the social studies? (33)

DCT - Is there any cooperative effort between departments, such as the science teacher directing the technical reading for an essay in English? (34)

DT - Do you know of any present activity or thought on your campus relative to increased integration of courses or cooperative efforts either from groups or by individuals? (35)

DT - Is there any organized method by which teachers of different subjects may become familiar with the phases of their work which are also covered by other teachers? (36)

DT - Do you feel further integration to be needed or desired? (37)

CT - Do teachers of science in general education hold conferences with each other to plan curriculum? (38)

T - How is the material to be covered in a given course determined? By means of or according to: (39)

A syllabus? \_\_\_\_\_ The teacher's option? \_\_\_\_\_  
 The Dean of the College? \_\_\_\_\_ The text book? \_\_\_\_\_  
 The Departmental Chairman? \_\_\_\_\_ A committee? \_\_\_\_\_  
 Shades and gradations of these? \_\_\_\_\_

T - Has the material now utilized proved generally successful? In other words, do you feel the type of program we have now is best suited for students in your school? For our society? (40)

T - Are you satisfied that the content of the course you teach meets the objectives of general education? (41)

T - Do you have any way of appraising the success of your course in meeting the objectives of general education? (42)

T - If the answer is yes, how is the appraisal made? (43)

T - Should general science courses be organized to accommodate different ability levels of students? (44)

T - In your school, is the same course offered to all ability levels? (45)

T - Are the general science courses being offered at the proper time or sequence in the school program of the student? (46)

T - If no, what do you feel the proper time to be? (47)

T - Should there be any specified sequence between general physical science and general biology? (48)

T - Have the science courses in biology and general physical science been successful in synthesizing their areas of science into a unified whole? (49)

T - Are the courses attempting to cover too many units? (50)

T - Is it possible to teach a significant portion of the scientific phenomenon in a four-hour course? (51)

PDCT - Without reference to the entire general education curricula, how many hours do you think the student should have in biology? In general physical science? (52)

T - In what divisions of the biological or physical sciences are the selection of materials for instruction the least problem for you? Why? (53)

T - Where do you experience the greatest difficulty in selecting that which shall be included in the course of study? Why? (54)

DCT - What new course, or major variation in that which we have, would you suggest, if any? (55)

T - Could the objectives of general science be met through a course in the history of science? (56)

Improvement of Instruction, In Service Training,  
and Intervisitation

PD - Is there any program in the school to acquaint the faculty as a whole with the general education program? What form does this take?  
Discussion at faculty meetings? \_\_\_\_\_ Group studies? \_\_\_\_\_  
Suggested readings? \_\_\_\_\_ Others? \_\_\_\_\_ (57)

PD - Has there been any such program in the past? (58)

DC - Is any program under way which may lead to the improvement of instruction in general education such as:

Study groups? \_\_\_\_\_ Committees? \_\_\_\_\_ Individual studies? \_\_\_\_\_ (59)

DC - What are the groups so engaged? (60)

DC - What has been their contribution? (61)

DC - Is there a record of their work? (62)

DC - Is this record available? (63)

PDC - Have any teachers as a part of their personal development pursued individual studies to better equip them as teachers of general education? (64)

PD - Are there interdepartmental meetings of general education teachers? (65)

PD - Other than means indicated in answer to previous questions, is there any organized system for inculcating the attitude of mind necessary for teaching general education subjects to those departmental teachers (specialists) assigned to general education classes? (66)

T - Have you as a part of your personal development pursued any individual studies to better equip yourself as a teacher of general education? Please outline the kind and extent of work. (67)

PDCT - Has any provision been made for teacher growth through intervisitation and observation of instruction?

Within the department? \_\_\_\_\_ Within the college? \_\_\_\_\_  
With other colleges? \_\_\_\_\_ (68)

PDT - From the standpoint of the administration (or teacher) would a program of intervisitation be desirable? (69)

PD - Do you see any insurmountable problems in establishing or developing a program of teacher growth through intervisitation within the school? With other institutions such as other state colleges? (70)

PDT - Would the benefits probably justify such a program? (71)

DCT - What part of the time of the teaching staff is given to departmental and interdepartmental planning? (72)

T - Do you have any way of appraising the success of your methods of instruction in meeting the objectives of general education? (73)

T - If the teaching of principles is thorough, will there be time left to attempt to direct the development of other qualities in the individual which the principles of general education hold desirable? (74)

T - Is there a laboratory associated with any of the general science courses? Which? (75)

T - How extensive is this laboratory? (76)

T - Has it proved successful? (77)

T - What are its strongest points? (78)

T - What are its weakest points? (79)

T - What has been done to strengthen these weaknesses? (80)

T - Are any additional laboratory units being considered? (81)

T - In what area? (82)

T - Why is this change being considered? (83)

T - Are there plans for dropping any laboratory? (84)

T - Why? (85)

T - To what extent is the demonstration used? (86)

T - Do students follow the demonstration as closely as they would their own experiments? (87)

T - Could a system of audio-visual aids and demonstrations be an adequate substitute for the laboratory? (88)

T - To what extent are movies, strip films, and similar visual aids used? (89)

T - How do you rate their effectiveness? (90)

T - Can you identify any reasons coming from your teaching methods for the degree of success enjoyed in meeting the immediate and long range objectives of the course? (91)

T - Can you ascribe any clear-cut cause or causes for the degree of failure experienced in teaching your course? (92)

CT - Do teachers of science in general education hold conferences with each other to discuss methods of instruction? (93)

CT - Would such a practice contribute to the improvement of instruction? (94)

Teacher Availability, Recruitment, and Qualifications

PD - Has it been necessary in the main to enlist the general education staff from the departmental groups, or have you been able to seek teachers who have been trained as teachers of general education classes? (95)

PD - Review of data on rating and salary of faculty members indicates an inequality between those teaching at the lower college level where general education predominates and the upper college level. By contrast, literature relating to the general education staff agrees that the person should have a broad preparation and unusual teaching ability. Is the general education staff member in your school recognized for his preparation even though it may not conform to the standard pattern of specialization and degree? (96)

PDT - What kind of teacher is desired as a teacher of science in general education with respect to subject matter preparation? With respect to attitude or philosophy of general education? (97)

PD - At the beginning of the program, what kind of teacher with respect to preparation and philosophy was available? (98)

PD - In your experience, have teachers qualified both in subject matter and attitude favorable to general education been available? (99)

PDC - What is being done to improve the teaching staff as teachers of science in general education? (100)

PDT - Which plays the greater part in successful teaching of general education subjects: (101)

Knowledge of subject matter? \_\_\_\_\_ Methods of teaching used? \_\_\_\_\_  
Enthusiasm and belief in the principles of general education? \_\_\_\_\_

#### The Teacher and His Load

PDCT - Is the teaching load of the general science teacher (in college hours) in line with that of other staff members? (102)

PDCT - Is the load of the teacher such that they can give some time to planning, to improvement of instruction, evaluation and pioneering? (103)

PDT - If not, is it anticipated that there will be more consideration of these problems in the future? (104)

PDT - Are class sizes, for the teacher of general education subjects, in line with accepted standards? (105)

PDT - Are physical facilities adequate? (106)



Evaluation, Appraisal of Outcomes, Tests and Testing

PDC - How well in your estimation are the objectives and philosophy of general education being carried out by the individual teacher of general science? Has there been improvement in this respect since the inception of the program? (107)

PDT - It is the practice in some schools to exempt from the general education courses those who can pass advanced standing examinations. Is this a good idea? (108)

PD - Would you in your administrative capacity support an extended and strong program of evaluation and appraisal of outcomes in terms of student learning and benefits? (109)

T - As you view your experience as a teacher of general education, do you feel that students leaving your classes will be better able to approach their problems with critical reasoning? (Analytical) (110)

T - Do you think the students after finishing the course will have made significant advance toward being able to read and listen intelligently in this area? (111)

T - Do you feel that the students will have developed the will and the habit of reading for pleasure and self-improvement the materials which relate to your teaching area? (112)

DT - Is there a program by which teachers come together to prepare examinations? (113)

DT - Is there an integration of the examinations of various teachers? (114)

DT - Is a committee ever used for the preparation of examinations, or has there been one in the past? (115)

DT - Is a specialist's help available or used in the preparation of tests and examinations? (116)

DT - Have any standard tests been used for student evaluation in the general sciences? (117)

T - Do you prepare your own examinations? (118)

T - Are the standard tests or common tests for all teachers of a subject in conformity with the objectives of science in education? (119)

T - Is there any teacher or group in the process of preparing standardized tests for this area? (120)

T - Have any means been devised for trying to examine the

development of the individual student along the lines set forth in the objectives of general education? (121)

T - As a generalization, what is the greatest problem of testing in the general sciences? (122)

T - Of the types of tests commonly given, which is most desirable? Which do you use most frequently? (123)

DT - Are the results of group tests and other placement data made available to the teachers? (124)

DT - Are any provisions made for placing students in classes according to test results? According to past experiences or classes? (125)

DT - What, specifically, is the program of placement into sections? (126)

#### Questions about the Student

T - To what extent is the student permitted to assist in the selection, planning and appraisal of his class activities? (127)

DT - Is there a planned program for the study of the student of science in general education in your school? (128)

Is this a research project? \_\_\_\_\_ A committee study? \_\_\_\_\_

An individual study? \_\_\_\_\_

DT - How do students view the taking of general science courses? (129)

DT - What estimated percent of the students accept the program with enthusiasm? Are passive? Antagonistic? (130)

DT - Is there resentment because of delay in taking specialized courses? (131)

DT - Would there be any benefits accruing to the student who is now excused from general science courses if he should take general education science? (132)

DT - Would you recommend that he take these courses? (133)

#### Miscellaneous Questions and Summary

PDCT - Do you feel that the program of general education in your college has been successful? (134)

PDCT - To what degree? (135)

PD - Considering the entire general education program, which area of learning has probably been most successful with its program? (136)

PDCT - What is the outstanding accomplishment of the general education program for the last five years, if any? (137)

PDCT - Failures or weaknesses, if any? (138)

PDCT - What do you feel the future has in store for the program?  
(139)

PDCT - What suggestions have you for immediate and future change in the program? (140)

Locally?                      State Wide?

PDCT - How has your attitude toward the program changed, if at all? (141)

## APPENDIX II

### OBJECTIVES AS STATED IN OKLAHOMA STATE COLLEGE BULLETINS

The objectives of general education and liberal arts as found in the recent Central State College Bulletin are:<sup>1</sup>

In its educational objectives, Central State College aims to work for the development of the desirable capacities of the whole individual. This necessitates the cultivation of social, moral, intellectual, vocational, and physical capacities for successful and useful living.

College experience should develop a capacity for international understanding and cooperation and for a fuller realization of democracy in every phase of living. It should enable students to apply trained intelligence to the solution of individual and social problems and to exercise leadership through adequate and acceptable communications.

#### General Education:

1. To promote democratic ideals in the local, national and world community.
2. To aid the student to think critically in order to adopt proper standards and solve the problems of life.
3. To develop the ability to speak and write effectively and to listen and read with critical intelligence.
4. To prepare the student for happy and successful living as an individual, as a member of his family, and of society.

#### Liberal Arts:

1. To develop individual appreciation of moral standards, spiritual values, and integrity of character.
2. To foster an appreciation of the dignity of the individual and the value of wholesome and fruitful self-development.

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<sup>1</sup>Central State College Bulletin, 1955-57, Vol. XLIV, No. 3  
(Edmond: Central State College, 1956), p. 1.

3. To train for informed, responsible citizenship and leadership in a democratic society by developing initiative, judgment, imagination, critical thinking, and the basic skills of communication and cooperation for success in social and family relationships.
4. To acquaint the student with, and help him evaluate, man's heritage of institutions, ideas, aspirations, and values.

The objectives of general education and liberal arts as found in the recent Southwestern State College Bulletin are:<sup>2</sup>

1. To provide, through general education, a broad background for a fuller life and a sounder foundation for specialized education.
2. To offer courses of study in the arts and sciences that will provide certain students with the pre-professional sequence they need and other students with a liberal arts education.
3. To provide a pharmacy curriculum for individuals wishing to make a career of pharmacy.
4. To provide a vocational or terminal course in the field of commercial art and secretarial work.
5. To provide an advanced professional course of study for students who already have acquired a bachelor's degree in education and wish to improve their proficiency and skill as classroom teachers.
6. To serve as an educational center and community agency for citizens of Southwestern Oklahoma.

General Education: The purpose of General Education is to provide a group of experiences common to all educated persons that will enable each to function more effectively as an individual, as a parent, as a worker, as a citizen in a democracy, and as a member of a world community. More specifically, General Education at Southwestern seeks to accomplish the following objectives:

1. To develop in students more effective communicative skills.
2. To foster a greater appreciation of our political, social, and cultural heritage.
3. To stimulate a greater appreciation for literature and the fine arts.
4. To develop in students an awareness of responsible citizenship.

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<sup>2</sup>Southwestern State College Bulletin, 1956-58, Vol. XLII, No. 1 (Weatherford: Southwestern State College, 1956), p. 16.

5. To create understanding and a desirable attitude toward matters of personal hygiene and public health.
6. To develop a deeper understanding of physical and biological phenomena, particularly as they apply to every day living.

The objectives of general education and liberal arts as found in the recent Northwestern State College Bulletin are:<sup>3</sup>

- A. In the widest sense
  1. To assist the individual in developing such perspectives that the precepts growing out of education, religion, and morality shall be embraced for the benefit of good citizenship and the improvement of mankind.
  2. To develop a respectful attitude toward the accumulated traditions and heritage from the past, and to inspire confidence in sound, orderly evolution for the future.
- B. For all students, regardless of the course pursued, the college aims
  1. To provide a rich background of our heritage in order
    - a. To develop the personality to the fullest degree of individual growth.
    - b. To enable the individual to approach with broader understanding the situations that may arise for him as a member of society.
  2. To promote sound mental and physical health, orderly habits of clear, critical thinking, and sound judgments.
  3. To cultivate the sense of beauty and aesthetic appreciation.
  4. To prepare the student for responsible citizenship in the community, the nation, and the world.
  5. To assist in formulating a guiding philosophy that will provide right direction to life.
  6. To acquaint the student with major areas of knowledge which are the common denominator of educated persons functioning as enlightened persons in a free society.

The objectives of general education and liberal arts as found in the recent Southeastern State College Bulletin are:<sup>4</sup>

Southeastern State College aims to help each person within its

<sup>3</sup>Northwestern State College Bulletin, 1956-57 (Alva: Northwestern State College, 1956), p. 15.

<sup>4</sup>Southeastern State College Bulletin, 1955-56, Vol. XLVII, No. 1 (Durant: Southeastern State College, 1955), p. 14.

influence to attain a full rich, and satisfactory individual life, to perform with competence a socially useful vocation, and to assume the privileges and responsibilities of a free man and good citizen in our American democracy. Its major objective is to train teachers for the public schools of the state. In addition, it provides a program of general education and liberal arts, pre-professional training, and vocational education.

**General Education and Liberal Arts:** All candidates for degrees are required to complete a prescribed plan of general education during the first two years. Students who do not expect to teach may pursue a program covering the major areas of knowledge and leading to a liberal arts degree.

The objectives of general education and liberal arts as found in the recent Bulletin of East Central State College are:<sup>5</sup>

1. A program of general education designed to extend and enrich the common basic educational experiences of all students. This program is at the college level a continuation of the kind of education predominant in the secondary school, being concerned principally with fundamental learning in the areas of social science, natural science, and the humanities, and receives chief emphasis in the first two years of the four-year college course. The studies are essentially nonspecialized and nonvocational, although they provide background for advanced and specialized work. General education aims primarily at a balanced development of the individual's knowledge, understanding, attitude, and behavior for responsible and intelligent maturity, successful and satisfactory adulthood, and civic competence in contemporary democratic society.

The objectives of general education and liberal arts as found in the recent Northeastern State College Bulletin are:<sup>6</sup>

As a result of continuing study the faculty at Northeastern State College believes that all students should participate in certain common experiences during the first two years of college work and that such a program of common experiences is best designated as General Education. It is believed that a program of General Education must make available to the student extensive experiences, which are both rich and important, in preparation for the major aspects of living in a democratic society; and that these experiences should provide for the development of personal talents and abilities, and for a

<sup>5</sup>Bulletin of East Central State College, 1955-56, Vol. XLVII, No. 1 (Ada: East Central State College, 1955), p. 13.

<sup>6</sup>Northeastern State College Bulletin, 1955-56 (Tahlequah: Northeastern State College, 1955), pp. 18-19.

satisfying participation in activities involving democratic procedures.

With this general philosophy, the entire pattern of General Education has these objectives:

1. the development of skill in communication, by which is meant the development of a degree of skill in oral or written composition together with the development of skill in reading and listening;
2. in the realm of scientific training, the student should acquire knowledge and understanding of the natural phenomena, both physical and biological, in his environment, not from the point of view of the specialist or professional, but from the point of view of understanding the natural phenomena in his environment in their implications for human society and human welfare;
3. to train the student to do his part (on the basis of knowledge and thinking) as an active and intelligent citizen in dealing with interrelated social, economic, and political problems;
4. acquaintance with a core of knowledge of history sufficient to enable the student to see clearly that the present is a product of the past—that it represents "the lengthened shadow of the past." This core should be limited to knowledge of periods and epochs in history that can be shown to have genuine significance in relation to the world of today. It is the man and world of today to be understood;
5. to give the student knowledge of and to lead him to an appreciation of old as well as new culture in western civilization as these cultures find expression in philosophy, literature, art and music.



### APPENDIX III

#### RESOLUTION ESTABLISHING THE PROGRAM OF GENERAL EDUCATION

Included in the resolution to the Board of Regents for Higher Education and approved by them in broad form is this extraction from the Intercollege Curriculum Committee's resolution.<sup>1</sup>

General education requirements for curricula in Arts and Sciences (EA and BS Degrees) and in Education (BA Ed and BS Ed Degrees)

Section 2. The minimum general education requirements for curricula in Arts and Sciences (EA and BS Degrees) and in Education (BA Ed and BS Ed Degrees) in the six state colleges, shall be as follows:

- A. Freshman Orientation . . . . . 1 hour
- B. English: Grammar and composition 6 hours and elective literature or speech . . . . . 2 hours  
Elective not required if Humanities 223 or 203-213 completed.
- C. Science and Mathematics . . . . . 7 or 8 hours  
8 hours science to be required of every student, to include both biological and physical science, except that student having had either kind (other than general science) in high school may elect to take all college science in the other field, or student having had physical science in high school may fulfill the requirement by taking at least four hours science and three hours mathematics.
- D. Social Studies . . . . . 9 hours  
American history and government six hours, and other social science three hours.
- E. Health 2 hours and Physical Education 4 hours . . . . . 6 hours  
Requirement and exemptions in physical education: Freshmen and sophomores are required to take physical education during these two years, or until four hours credit has been earned, except that the following students are exempt: (1) married women irrespective of age, (2) all students not less than twenty-five years of age

<sup>1</sup>Intercollege Curriculum Committee, A Resolution Regulating the Curricula of the Six State Colleges (Ada, Oklahoma: East Central State College, 1952), pp. 2-3. (Lithographed).

at the beginning of the semester or term in question, (3) any student whose physical condition makes it inadvisable or impossible that he take the work, as attested by designated authority. Exemptions other than physical disability do not apply in any case in which the student has failed to take physical education as required prior to that time. Likewise a student who reaches junior or senior standing without having fulfilled the requirement, is required to take sufficient physical education to complete same, unless his physical condition will not permit.

A student entering from another college as freshman or sophomore is required to take physical education at the rate of a one-hour course each semester or term until he reaches junior rank, or earns four hours credit. A student entering as junior or senior is not required to take additional physical education.

- F. Humanities . . . . . 5 or 6 hours  
General Humanities 203-213, or 5-6 hours in two of: (a) Humanities 223 Introduction to Literature, (b) Humanities 232 Art in Life, (c) Humanities 242 Music in Life, (d) one of: Humanities 252 Philosophy in Life, Psychology 203 General Psychology, Psychology 213 Mental Hygiene, Sociology 223 Social Psychology.
- G. Five hours in a foreign language or in two or more of the following: mathematics, psychology, fine arts (art, music, speech arts), practical arts (agriculture, business, home economics, industrial arts) . . . . . 5 hours
- H. Additional work in areas E-G above, to make total 50 hours. In accord with state teacher certification requirements, in the Education curriculum ten hours work in general education may apply on the major also, and vice versa.